AMERICAN AGRICULTURIST

FOR THE

FARM · GARDEN · & · HOUSEHOLD

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

VOLUME LIII.—No. 7. NEW YORK, JULY, 1894. NEW SERIES—No. 570.

THE CRANBERRY HARVEST AT CAPE COD, MASS. (*See Page* 373.)

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SCIENCE A NECESSITY FOR SUCCESSFUL AGRICULTURE.

HOWARD EVARTS WEED, MISSISSIPPI AGRIC. EXP. STATION.

AT NO period has science so largely benefited agriculture as at present, and the time has long since passed when there is nothing to be done but to plant the seed in the spring and gather the harvest in autumn. While agriculture has made much advancement during recent years, yet it has hardly kept abreast of the times during the last decade, and some of the other industries have pushed ahead of this most ancient and honorable occupation. Agriculture has excluded itself too much from the other lines of industry, and is just now coming abreast of the times through the aid which science has rendered. This is particularly true in some special lines. Farm crops are attacked by two kinds of organisms — the injurious insects and the parasitic fungi—and it is in dealing with these that perhaps the most advancement in scientific agriculture has recently been made. The insects eat the leaves and suck the sap of the plants, while the parasitic fungi feed upon the rich juices of plants, causing a great check in growth. How much damage is caused by injurious insects and parasitic fungi cannot be estimated in just so many dollars and cents, but it is safe to say that fully one-fourth of the average yield of all farm produce is destroyed by injurious insects alone. That is to say, that were it not for the insects, the yield would be one-fourth greater than it is at present. To one who has not given this matter attention, this statement may be received somewhat doubtfully; but it is, nevertheless, only too true. Take the case of some of our grains—say corn, for example. The seed has scarcely pushed its tender stalk above ground before the cutworms necessitate a second planting. When the second planting, or what remains of the first, is about three inches high, the bud-worms begin their work upon the part of the plant which is above ground, while the root-worms feed upon the remaining portion which lies beneath the surface. Owing to the damage caused by these insects, the farmer may well take the advice of the poet and plant

> "One for the blackbird, and one for the crow,
> Two for the cutworm, and three to grow."

If by good luck the corn reaches the roasting-ear stage without being attacked by the chinch-bug, the forming grain is eaten by the boll-worms, and a little later by several weevils and the larvæ of the grain moth. The grain weevils and the larvæ of the grain moth continue their work of devastation after the corn is harvested to such an extent as to destroy the entire harvest in many cases. But by the application of proper remedies a large part of the loss caused by injurious insects can be prevented, and that with but little trouble and expense. It is here that the science of entomology comes to the rescue of the agriculturist by bringing forward insecticides to lessen, and indeed in some cases to entirely prevent, the loss caused by the ravages of injurious insects. In the case of the American corn referred to, the insects which attack it can all be more or less successfully dealt with by proper cultivation and the application of insecticides. Clean culture and good cultivation will greatly lessen the number of the insects which attack the growing corn, while the application of bisulphide of carbon to the grain as soon as harvested will prevent further damage by insects in the granary.

In many cases the loss through damage by parasitic fungi is no less than that caused by the attack of injurious insects. The diseases of the grape have, perhaps, received the most attention at the hands of mycologists, and the beneficial results of their work in this branch of scientific agriculture manifest themselves on every hand. Grape diseases were formerly but little prevalent, but during recent years they have increased in their distribution and destructiveness to such an extent that it is now almost impossible to bring the grapes to maturity without the application of a fungicide to check the growth of the parasitic fungi which are the cause of the grape diseases. This being the case, the viticulturist knows that the application of the Bordeaux mixture is as fully an important part of success as pruning or cultivation. But it has also been recently shown that many plant diseases other than those of the grape can be checked in like manner by the application of fungicides. A prominent example of this is found in the good resulting from the application of Bordeaux mixture to potatoes, recent experiments showing that this fungicide not only prevents the potato rot, but also so very largely increases the yield that it would pay well to apply the Bordeaux mixture for this latter purpose alone, where potatoes are subject to early blight. This increase in yield was a result unlooked for when the experiments were conducted This same fungicide is used in spraying apple trees to prevent the apple scab, and experiments last season at the Cornell station show that the Bordeaux mixture not only prevents the scab, but it increases both the yield and keeping qualities of the fruit.

But in other lines of agriculture, science has but recently shown many things of interest. It has long been supposed, and, indeed, common sense would go to show, that the winter protection of milch cows would pay, yet it has remained for the Indiana experiment station to recently show just what and how much benefit is to be derived from such winter protection. The matter of sub-irrigation has received attention at the hands of some of our stations, and the experiments have shown that this system of irrigation is much superior in its results to the usual methods. Agricultural chemistry, dairying, and bacteriology are as yet but new sciences, and this is especially so in the intimate relations which they bear to each other. The matter of the fermentation of milk is now receiving much attention, and bacteriology will probably soon show us a method of greatly prolonging the sweetness of milk. By a method of milk testing, we are now able to say just how much butter fat a given amount of milk contains, *i. e*, how many pounds of butter can be made from the given quantity of milk. This being the case, the milk now sold at creameries is paid for in proportion to the amount of butter fat it contains. Thus we see the intimate relations existing between the sciences which underlie agriculture. We also see that science has brought agriculture forward to the state of advancement in which it now stands. That agriculture should be our foremost, as it ever has been primarily the most important, industry there can be no doubt. But science has not completed its work in aiding agriculture. Indeed, the results so far obtained but go to show the possibilities which lie beyond. Other equally important results in scientific agriculture may be looked for, and if the agriculturist wishes to be successful, he should put the latest results of scientific investigations into immediate practice. The greatest aid to the agriculturists in this country is the experiment stations—and it is through these institutions that much of the future aid to agriculture will be brought forward.

LATE CULTIVATION OF CORN.

CHARLES E. BENTON, MASS.

In the Atlantic States it is customary, especially among dairy farmers, who constitute an increasingly large proportion of farmers in the East, to bid goodby to the cornfield sometime during the last week of June, and until cutting time in September. This is deemed a necessity in order to give full attention to haying and harvest. But the necessity is more apparent than real. In soils afflicted with various rank growing weeds, especially those where Canada thistles have obtained a firm rooting, the corn is not sufficiently advanced by July to hold its own against the vigor inherent in noxious growths. The thistles have deep tap roots, that reach never failing moisture. Light surface cultivation, though it may cut their tops, scarcely disturbs their growth at all. To run the ordinary cultivator in deeply so late in the season would greatly injure the corn by breaking off its feeding roots, which run horizontally through the soil in great numbers.

There is a way in which the thistle roots may be reached without injury to the corn. Take one of the numerous shovel plows that have adjustable wing blades at each side. They are made to hill up the corn but should not be used in that way. The shovel plow must be made to run perfectly flat, with the wings extending on each side to their full extent. To accomplish this, a fixture may be made, with a little help from the blacksmith, by which the whippletree may be attached some four or five inches lower than the end of the beam, and the handles may be raised to correspond. Now let out the traces to the longest hole and attach a very short whippletree, not more than ten or twelve inches in length, so as not to break or bruise the brittle young stalks of the growing corn.

Such cultivation will give a death blow to the thistles between the rows, cutting them off below the crown of the root. There is another advantage in this late cultivation, other than the killing of weeds. Whether it is because the cleavage and uplifting of the soil causes its aeration and the consequent more rapid oxidation of the organic matter, or whether it is because the supplies of moisture and plant food being appropriated by the weeds, are by this means released to the corn, I can not say. Probably each has its proportionate effect, for in my own practice such cultivation has always been followed immediately by the most rapid corn growth of the season. Most farmers hire some extra help by the day for haying and harvest, and in poor weather the day hands lose their time and the farmer loses their board. Make one change; hire your extra help by the week or month and, according to my experience, it will cost you no more. Then you will be able to utilize in the cornfield many damp forenoons and cloudy days that would otherwise be about the same as lost.

IT PAYS TO THIN FRUIT.

L. R. TAFT, MICHIGAN EXPERIMENT STATION.

Successful fruit growers have found from experience that, in seasons when their trees set a full crop of fruit, they will receive better returns for their money, if a considerable proportion of the fruit is removed from the trees early in the season. When a tree sets a large number of fruits, it is frequently unable to develop them to their full size, and the quantity of merchantable fruit is less than would have been obtained had three-fourths of them been removed. The growers who neglect to do this are the ones who receive low prices for their fruit, and generally no one is to blame but themselves. When they are getting one and one-half cents per pound for their grapes, and fifty cents per basket for their peaches, their neighbor, for the same varieties grown under precisely the same conditions, except that he carefully thinned his fruit, may be getting double those prices. The man who thins his fruit, moreover, is seldom caught in a glut, as his goods are quickly snapped up as soon as they are placed on the market, while the small, misshapen, and often unevenly-graded fruit of the less skillful grower, cannot be sold at any price, and, finally, is carried to the dump. He has thus not only lost his fruit and the labor of gathering and packing it, but he has also been to a considerable expense for packages and transportation, for which he will receive no returns.

But, after all, it often happens that a still greater loss is experienced in another way, as if a tree is allowed to ripen a large number of fruits, it will be so weakened that it will not be able to mature fruit buds for a crop the following year, and the tree will thus waste one-half its time in recuperating. While the flesh of the fruit is largely water, and the amount of mineral matter required in its formation is comparatively small, it is not true of the seeds, which are composed largely of mineral matter, and contain considerable quantities of phosphoric acid. When we consider that a bushel of peaches from unthinned trees contains three times the number of pits that a bushel from thinned trees does, and, consequently, that it draws on the soil and on the tree in about the same proportion, we can see one reason for the irregular bearing and the premature exhaustion of our trees. While peaches, plums and other stone fruits, are particularly likely to be injured by excessive bearing, other fruits are injured, although to a less degree.

The fruit may be thinned in a variety of ways, and in some cases it may be brought about by the pruning or thinning of the bearing shoots. The effect of thinning can be seen in strawberries grown under the hill system, in which the runners are kept off, and only a few strong plants are allowed to grow, as compared with the matted-row system, in which the fruit is produced by a large number of weak plants. With most varieties, and under favorable conditions of soil and season, the few will produce as many if not more quarts of berries as the many, and they will find a ready sale at a greater price than can be obtained for the small berries from the weak plants. Not only can pruning be made to serve as a partial thinning with the raspberry, blackberry and grape, but it can be employed to a considerable extent with the tree fruits. Many growers of the peach are able to do fully one-half of their thinning by judiciously heading back and thinning out the branches. A peach tree is generally benefited if the last year's growth is cut back one-half, and if anything like a full crop of fruit is promised, it will save that much thinning. If only a few buds are found to be alive in the spring, little or no pruning should be given. By delaying the pruning until April, a fairly correct idea can be obtained of the prospects of a crop. The thinning of the fruit itself should be delayed until the seeds begin to harden, as up to this time little mineral matter has been used by them, while if the thinning is done soon after the fruit sets, there might be such a loss from insects, fungi or other causes, that the number remaining might be too small for the best results.

The extent to which the thinning can be carried will depend, to a considerable degree, upon the strength of the tree, the number of fruit-bearing branches, and any other conditions that will influence its ability to mature a crop. When peach trees have not been headed back, it is a good rule to thin the fruit so that there will be a peach every six inches, but when strong and vigorous trees have been cut back, the distance may be lessened to four inches, provided no more than two fruits remain upon a branch. A similar rule would answer with some varieties of grapes, although if a large number of buds were left in pruning, it is well, with some varieties, to remove all but one bunch from each shoot. Pears, particularly if grown as dwarfs, will also well repay careful pruning, and while at first thought it may seem that it cannot possibly pay to thin apple trees, one will only have to try it to be convinced, especially if small trees set full crops. When thinning plums, peaches and other fruits that are likely to contain the larvæ of insects, it is well to have a basket along, into which the fruit can be thrown as it is taken from the tree, so that they can be destroyed, and their number in this way lessened.

Having in mind the number of fruits that should be left upon a tree, we should take pains to secure their even distribution. As a rule, the beginner will remove too few fruits, and although he may think he has gone too far, it is generally the case that he has not taken off half enough. When the orchards are properly cultivated and enriched, when the trees are sprayed for the destruction of insects and fungi, and when the fruit is properly thinned, the demand for Northern-grown fruit will increase, and it will bring remunerative prices, but unless this is done the California fruits will drive nearly all else from the markets.

A PLEA FOR NUT TREES.

A. S. FULLER.

It seems to be one of the weaknesses of mankind to cling to old ideas, and even venerate the acts of ancestors, whether they were wise or otherwise. Because the first white men who settled in the New England States made much of the American elm, planting it almost everywhere to the exclusion of better and more valuable trees, or, because the Holland Dutch, in the settlement of Manhattan and Long Island, saw fit to import Dutch cork-bark elm and European lindens, planting these about their grounds and along the roadsides, it does not follow that we should perpetuate their practices centuries later, as is now being done in many localities. In Europe this clinging to ancestral ideas and practices is just as much a trait of the people as it is in this country, but, fortunately, some wise man of ancient times discovered that a tree might be both useful and ornamental, and, with the two combined, the planter would be doubly blessed.

When or by whom the chestnut and walnut were first introduced into Southern and Central Europe is now unknown, but it was very early discovered that they were beautiful and easily grown trees, yielding an immense amount of excellent and nutritious food for both man and beast. The fashion or custom once established among the people, the propagation and planting of these trees became general, and has continued uninterruptedly in several European countries for more than two thousand years. They are planted along the highways, in parks and forests, and for memorial trees for births and marriages—in fact, to set out a nut tree is considered an act commendable alike in prince and peasant. The result of this custom is to be seen in the annual crop of over thirty millions of bushels of chestnuts alone, gathered in France and Italy, and probably nearly or quite as many walnuts. Hundreds of thousands of bushels of these nuts are exported, and we are pleased to obtain a share and pay a high price for them, although these nut trees will grow here as freely, and bear as abundantly, as in any country of Europe. They may not thrive in our extreme Northern border States, but they certainly do in many of the Northern, and all through the Middle and Southern States.

But it is not necessary to go to Europe or Asia for valuable nut-bearing trees, for our forests are full of them, and we have several native species worthy of extended cultivation. Our native chestnut is superior to the foreign in flavor, although not as large,

consequently does not command as high a price in market, but it is becoming more and more valuable as the demand increases, and the supply decreases with the destruction of our original forests. The same is true of the shellbark hickory and pecan nut, and all three should have long since been extensively planted as roadside trees in place of the hundreds of worthless varieties and species to be seen in such positions in all the thickly settled parts of our country. Of course where the European or Asiatic walnut will thrive, and the larger varieties of the foreign chestnut, we would give them a prominent position—not because they are more ornamental than the native kinds, but their nuts command a better price, and this is an incentive for planting and future care not to be ignored in any community nor under any circumstances.

It may take a little more time to secure a crop of nuts than of the ordinary kind of farm crops, but a nut tree when large enough to yield from five to ten dollars' worth of nuts annually, will not occupy any more land than is required to produce a dollar's worth of wheat, or other kind of grain. In addition to this there is no annual plowing and seeding to be done for each ensuing crop, for when a nut tree is once established it is good for a hundred years or more, increasing in value and productiveness with age, and when, finally, its usefulness ends as a producer of food, its wood is worth as much as that of any of our purely ornamental trees. If our farmers and others who were planting shade trees twenty-five and fifty years ago, had thought of this and put the idea to a practical test, the roadside trees alone would, to-day, yield many millions of dollars' worth of nuts, which we are compelled to obtain elsewhere.

Taking this view of the subject I ask, in all sincerity, if it is not about time that a change was made in the kind of trees generally planted along our highways? Our ancestors in this country may have been very careless and unwise in the selection of the kinds of trees planted for such purposes, and, however much we may regret it, we should strive to remedy defects, keeping in mind that posterity will also have something to say about our plantings.

DIFFERENCE BETWEEN THE BABCOCK TEST AND THE CHURN.

E. H. FARRINGTON, ILLINOIS AGRICULTURAL EXPERIMENT STATION.

Nearly every dairyman who understands the Babcock milk test, knows that he should recover by the churn more butter than there was butter fat in the milk started with. Why? Because butter contains water, salt and curd, and butter fat does not. The Babcock test shows simply the per cent. of fat in milk and nothing else. The churn may or may not separate all the butter fat from the cream, and mixed with the butter there is an amount of water and curd which is not the same quantity in every churning. If two or more men should test the same lot of milk by the Babcock method, they would each get the same result if the test was correctly made, but if this lot of milk was divided into two or more equal portions, and each man was at liberty to cream and churn the same weight of milk, each one would probably obtain a different weight of butter, although they had the same amount of fat in the milk they started with. This would be true even if the same method of separating the cream and the same churn were used in every case. It is almost impossible to make butter with the same amount of water and curd therein, every time.

The best methods of skimming milk will give in the cream nearly all the butter fat contained, and the best methods of churning cream will leave only a trace of fat in the buttermilk, so that nearly all the fat of the original milk ought to be recovered in the butter. In addition to the fat, the butter holds water and curd, consequently the best practice of creaming and churning ought to furnish more butter from a given quantity of milk than the test showed butter fat. This difference, however, will always be a more or less variable quantity. It has been found in dairy and creamery practice that this "excess of the churn over the test," amounts to about twelve per cent. in good practice, but it may vary from an amount less than the fat found by the test, to about eighteen per cent. more. The loss or increase of the amount of butter obtained by the churn, over the butter fat found by the Babcock test, depends on the skill of the dairyman. The only factor that apparently causes this difference between the "test and the churn" or the butter fat and butter, is the method of handling the milk and cream. Man, and not the cow, seems to be responsible for the gain or loss, by the churn, of the butter contained in the cow's milk.

An illustration of both a gain and a loss of butter as compared with the butter fat contained in the milk, is shown in the following record of two churnings. A Babcock test of 380 pounds milk showed that it contained 4.9 per cent. butter fat, or 380×.049=18.6 pounds butter fat. When this milk was skimmed there was obtained 283 pounds skim milk, which tested 0.35 per cent. fat, or one pound fat left in the skim milk; and 97 pounds of cream which tested 18.15 per cent. fat, or 17.6 pounds fat in the cream (97.×.1815 =17.6 pounds). By churning this 97 pounds cream there was obtained 21 pounds butter and 76 pounds buttermilk. This 21 pounds butter is 2.4 pounds, or 13.2 per cent. more butter than the 18.6 pounds butter fat which the milk contained. The butter contained 83 per cent. fat, or in 21 pounds butter 17.5 pounds fat. The 76 pounds buttermilk tested 0.1 per cent. fat. 76×.001=.07 pounds fat. The 18.6 pounds fat in the milk is thus all accounted for by the weight and test of the skim milk, buttermilk and butter. 1.+ .07+17.5=18.57 pounds fat. There was left in the skim and buttermilk 1.07 pounds fat, but the butter held 3.5 pounds water and curd, so that 21 pounds butter was obtained from milk which the Babcock test showed 18.6 pounds fat. In this case the churn gave 13.2 per cent. more butter than there was butter fat in the milk. Another record was as follows:

Milk	454 pounds	×.043	(test 4.3%	fat)	=19.5	pounds fat.
Skim milk	361 "	×.004	(" 0.4%	")	= 1.44	" "
Cream	93 "	×.194	(" 19.4%	")	=18.04	" "

When this cream was churned there was obtained 17.5 pounds butter and 75.5 pounds buttermilk.

This butter	17.5 pounds	×.790	(test 79.0 %	fat)	=13.82	pounds fat.
Buttermilk	75.5 "	×.053	(" 5.3 %	")	= 4.00	" "

The 17.5 pounds butter obtained in this churning was two pounds less than the 19.5 pounds butter fat in the milk. This two pounds loss is about 10.25 per cent. of the 19.5 pounds fat in the milk. In this case the churn gave 10.25 per cent. less butter than there was butter fat in the milk. The records of these two lots of milk show what variations there may be in practice between the amount of butter obtained by the churn and the butter fat in the milk, as indicated by the Babcock test.

The best practice in creaming and churning milk will give more butter by the churn than butter fat by the test, but there are many butter makers who get less, and one valuable use of this test is the means it gives the butter maker of locating the loss. This can be done by testing the skim and buttermilk. The loss of butter in the second of these two trials, was in the buttermilk. The cause of this loss was the temperature of churning and the sweetness of the cream when it was churned. These complete accounts kept of the milk from the time it left the cow until the butter and buttermilk were weighed, furnish evidence to show the practical accuracy of the Babcock test. By weighing and testing the milk, skim milk, buttermilk and butter, the butter fat found in the last three should be, theoretically, just equal to that found in the milk from which they were derived. If the method of testing any of the milks was inaccurate, it is evident the two sides of the account would not balance. The figures from these two trials show the following:

First Trial.—Pounds of Fat.				Second Trial.—Pounds of Fat.			
380 pounds milk			=18.6	454 pounds milk			=19.5
283 "	skim milk		= 1.00	361 "	skim milk		= 1.44
76 "	buttermilk		= 0.07	75.5 "	buttermilk		= 4.00
21 "	butter		=17.50	17.5 "	butter		=13.83
		18.6	18.57			19.5	19.27

In these two accounts, the difference, which is .03 pound in the first and .23 pound fat in the second trial, is the amount of fat that is lost by the necessary manipulations in skimming and churning. It is called the mechanical loss. A daily account like this was kept with the milk of each breed at the World's Fair dairy test. The writer has a record of 312 of these balance sheets. The average weight of fat unaccounted for daily was, in the records of the Jersey milk 0.043; Guernsey 0.054; and Shorthorn 0.052 per cent. of the milk produced per day in the ninety-day test.

The memorandum of these churnings shows two things: First, that the Babcock test is a very accurate method of estimating butter fat. Second, that cream can be, and probably often is, so handled that the churn yields butter all the way from one-tenth less to about one-eighth more than the test shows butter fat.

Sell the Hard Keepers.—Some strains of every breed of domestic animals are what is termed hard keepers. These should be disposed of at the first opportunity, and others that more readily respond to proper care obtained. Let improvement be the watchword in the stock line as well as in obtaining the latest and most successful implements when they are required. It is only by this discriminating care that one will be able to maintain a profit in this age of low prices and close competition in all lines of farming.

CAPE COD CRANBERRIES.

S. H. FERRIS, MASSACHUSETTS.

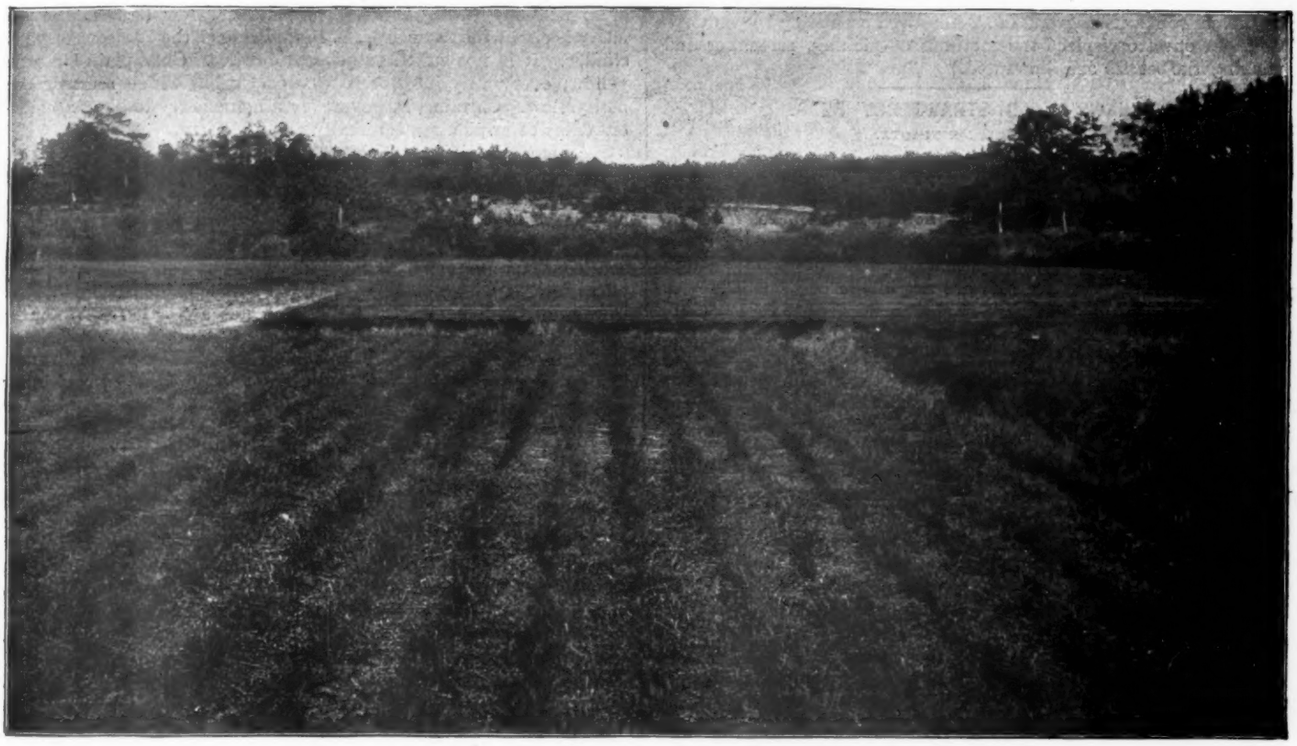
Cape Cod, the long, sandy peninsula that stretches out into the Atlantic ocean for sixty-five miles from the Southeastern coast of Massachusetts, is one of the principal native homes of the cranberry. The soil of Cape Cod is very peculiar in its composition. It is entirely of alluvial formation, and from Buzzards Bay, at the base of the peninsula, to Provincetown at the tip end, the ordinary character of the territory is a dreary waste of fine, white sand. Farming is an impossibility, and the husbandman confines his efforts to the raising of a few household garden products, which are secured only at the expense of much labor and a liberal application of manures.

Scattered quite plentifully over this otherwise barren peninsula are low depressions in the sandy soil, under which a layer of clay lies, acting as a receptacle or bowl to hold the accumulating surface water. As a product of many years of growth, these depressions are filled with a mass of vegetation, comprising such trees as the cypress and swamp maple, with various vines and bushes common to a moist soil. These swampy places are from one acre to two hundred acres in extent, and, in preparing for the raising of cranberries, one of these bogs is secured. A few years ago they could be bought for a low price, but the large sums of money that have been realized in the culture of the fruit during recent seasons have sent prices up, and wild swamp lands are now held at from $50 to $100 per acre.

The first requisite in making a cranberry bog consists in clearing away from the swamp all of the wild growth of vines and bushes and trees. The cypress is hauled out upon the banks and sold for lumbering purposes. The small trees and brush are burned upon the spot, and the ashes allowed to mix with the soil. Then the entire surface is graded to an exact water level, and cut up into irregular-shaped rectangles by the running of irrigating ditches. The surface of the bogs now consists entirely of a peaty mass of roots. The depth of the peat on Cape Cod is from eighteen inches to three feet.

The surface of the new bog having been carefully cleared of all large roots and stumps, and graded to a water level, Cape Cod sand is placed upon it to a depth of from six to eight inches. This is also carefully smoothed and leveled off. The work of preparing the swamps is generally done in the fall and winter, and the necessity for its performance has had a curious effect upon the population of the Cape. Twenty years ago a native of a foreign country was almost as much of a curiosity as an orang-utan in this odd corner of Yankee land. During the last decade, however, hundreds of families from the shores of sunny Portugal have emigrated here, and to them the hard labor of making new bogs is mainly consigned. The bog having been made ready for the vines, the next work consists in the preparation of a reservoir for the storage of water to be used for irrigating and for fighting the insect enemies of the cranberry plant.

In the spring the new vines are set out by the Cape Cod girls and women. Branches of the plant are first cut from old bogs. Holes are then made in the soil and pieces of the vine planted in them in hills about fifteen inches apart in all directions. The cranberry plant is very hardy, and it is said that pieces of it an inch long sown broadcast will take root and grow, therefore the work of planting requires no great care or skill. During the first summer the new plant speedily grows, root and branch, and the first year of its life will probably see it yielding a small crop of fruit. The second year will see a larger number of berries upon it, and the third year the harvest from it will be very liberal in quantity. From this time on for an indefinite period the plant rewards care and cultivation in a most gratifying way, and is a steady and regular payer of dividends upon the money invested in the enterprise. Weeds are a constant source of trouble upon all cranberry bogs, and they must be fought with unceasing vigilance. Upon the larger bogs a gang of men is kept constantly at work fighting them, and upon a well-kept swamp not a single plant of foreign growth can be seen lifting its head above the expanse of interwoven emerald vine. The value of commercial and farmyard fertilizer as an aid to the production of cranberries is admitted by some, and denied by other growers. Some of the bogs receive a periodical application of phosphates, or stable manures, but the majority of them produce their fruitage with no other aid than that secured from the application once in four or five years of three or four inches of clear white sand spread evenly over the vines and allowed to settle around the roots. This process induces the plant to send forth new branches, and more and better fruit is the result.



A CAPE COD CRANBERRY BOG.

The cranberry vine blossoms early in June, and the fruit is ready for harvesting in September. In the work of gathering the berries, almost the entire population of Cape Cod between the ages of sixteen and sixty is engaged. Schools are closed, and whole families leave their homes and emigrate to the sides of the big bogs, where they live in rude frame shanties and shelter tents. Some of the choicer varieties are gathered by hand, but most of the berries

are now harvested with a cranberry picking machine. This machine consists of a small box held in the right hand. It has steel prongs upon the under side that run in among the vines, and by the closing of a small slide, the fruit is raked off from the plants. When the harvesting is under way, the big meadows are generally lined off into rows about eight feet wide. Into each one of these rows four pickers are placed, and each one of them moves ahead in a straight line, gathering the berries in front of him. Overseers are employed to constantly patrol back and forth behind the pickers to see that they gather all of the fruit.

After the berries are gathered, they are placed in a machine that removes all of the bits of vine and some of the unsound fruit found among them. From these machines the berries are taken to screens or long, box-like receptacles that are made with bottoms of slats placed about a quarter of an inch apart. Seated around each one of these are a number of women called "screeners," whose deft fingers slowly move the fruit toward the mouth of the screen and the barrel that is to hold them, removing, in the meantime, all overripe or rotten berries. Then the fruit is placed in bright, new barrels of one hundred quarts capacity, settled with a screw press, headed up, stenciled, and shipped to markets in every part of the world. [The accompanying illustration, on the preceding page, is engraved from a photograph of an improved cranberry bog on Cape Cod. In our frontispiece the methods of picking, screening and packing the berries are illustrated.]

RENEWING OLD STRAWBERRY BEDS.

C. L. HILL, MINNESOTA.

Some of our most successful horticulturists turn their strawberry beds under at the close of their first bearing season. They aim to furnish the best possible conditions, and attend to all details in a concentrated effort to make the one crop a heavy one. When success has been reached it means that the plants have done enough work to exhaust themselves, and are not in the best condition for forming a new set of plants such as shall yield a second heavy crop. The grower has plenty of strong young plants of his own raising, and has every facility for planting new beds at light expense. So the scale turns in favor of the one-crop system. But with persons who make strawberry growing only a small branch of a diversified industry, and with farmers who grow berries only for home use, the case may be different. These seldom grow the heavy crops that are to be looked for on the beds of the painstaking strawberry specialist. With them the bed does not always get a good start the first season, bears but a light crop the next year, and is then in a condition to promise a much heavier crop for the next year, under proper treatment, than was the first.

The renewal of a bed does not require a large amount of work, and this may be done mostly by a team. But it is very important that it be done early. New runners start even before the fruiting is over, and the remainder of the season, when fully economized, is none too long for the work the plants are to perform. After having tried several ways, the plan I have adopted is as follows: When the last picking has been done, the same day if possible, the mowing machine is run over the bed, cutting down everything high enough to be reached. As soon as the litter on the ground is dry it is raked into the spaces between the rows and burned. If wet weather prevents the drying of the rubbish, it is removed from the bed, rather than to have much delay. But I prefer to have the fire on the bed, running over all the surface save narrow strips where the rows are, for it destroys weed seed and germs of disease. Next I set up a few sticks along each row, exactly in a line, for guides, that I may get the new rows straight and in their proper places. Sometimes the burning off is so well done that the fire lines furnish the necessary guides. When ready for the work I attach a narrow set of teeth to the riding cultivator, set the gangs so as to straddle about twelve inches, and go along each row, pressing the shovels to such depths as shall do good work without clogging. After going over the bed in this way, the gangs are set a few inches closer to each other, so as to narrow the row space, and at the same time to make the shovels follow new paths through the soil. With other changes of widening and narrowing, as may seem best, the bed is gone over three or four times until the soil is thoroughly stirred to a good depth, all save the narrow spaces for rows some six inches in width.

My rows are a little more than four feet apart and thirty rods in length. Even a quadruple cultivation of an acre is no big job. It requires but little more walking of the team than would be necessary in the simple matter of plowing if the bed were turned under. Some hand work is always done along the rows, removing the weeds and lightly working the soil when crusted over, as it is likely to be at this season of the year. Sometimes a smoothing harrow is run over the bed as a short-cut method of doing this work; but I am not fully satisfied that it is the best way. If no drouth happens at the time, the plants make a rapid growth, and before the season is over there are wide rows of well-rooted plants.

RASPBERRY NOTES.

E. P. POWELL, NEW YORK.

There happens to be just now need of advance all along the raspberry line, notwithstanding the fact that we have in the last half century created the whole raspberry harvest and market. Of the older sorts Cuthbert alone of the reds stands well nearly everywhere. It is somewhat tender as far north as Boston and Buffalo in exposed positions. Turner suckers beyond endurance. Shaffers is too dark and the cane rusts. Marlboro, on some soils, is inferior, and always requires good culture. Thompson is early, but small. Hansell and Crimson Cluster are decidedly unsatisfactory with me, and the same must be said of several other sorts industriously disseminated. Of the newer sorts Muskingum belongs in the Shaffer class, but has a very solid fruit that will carry well. No one, however, will buy these berries except at very low figures. Superlative is either the same as E. P. Roe's Pride of the Hudson, or very similar. It is not suited to general culture. Champlain is a pale yellow, every way inferior to Golden Queen, which remains the best yellow. Caroline, however, for a home berry to be used without delay after picking, is a really fine table fruit.

Among the blacks, Palmer and Kansas are excellent. But Kansas is not equal in size to Gregg. Gregg is, unfortunately, not hardy. Now what we want is a succession of berries, beginning as early as Davison's Thornless and closing as late as Gregg, and fully as large as the latter. In reds we need a berry as large and reliable as Cuthbert, but as early as Marlboro, and then a succession running on as late as Cuthbert. Marlboro gives a standard of color, and Turner of quality. For canning I do not ask a berry better in quality than Shaffer's Colossal. But the color is not acceptable to housekeepers. It is a remarkable innovation in the fruit, however. The canes grow twelve feet in a season, and, while always killing bark, there is always a crop, and a very big one. It is a grand home berry. As a market fruit, the red raspberry is rarely ever in supply above demand. It is useless to raise it for a distant market. The local berry will always hold the local market. The red has fifty friends to one for the black.

The best remedy for a drouth is heavy mulching after spring harrowing. I run the cultivator in April, and then apply all the mulch that I can command. In the fall I gather enormous piles of leaves, these in the spring making admirable mulch. There is great advantage in growing the rows so that the bearing branches will reach out nearly to touch each other and shade the ground. Cut out old canes in September or October; then tie the new canes to wires, or rather in small bunches just below a wire stretched along posts. Then, in late October, cut off the tops with hedge shears, leaving the canes five feet high. Apply a good coating of manure, and wait until spring. In picking time the rows should present almost solid walls of berries, but if there be a lack of moisture, the upper clusters will be dried. Irrigation must ultimately be almost as common in the East as it is in the West.

SHORT FURROWS.

MARION RAMBO.

He is always a slave who lives beyond his means.

It is an easy thing for a lazy man to overwork himself.

A shady fence corner is an irresistible temptation to some men.

I never thought that a man could ride heavenward on a sore-backed horse.

The greatest friend to the butterine producer is the farmer who sells poor butter.

If every man were to get rich who believes he knows how, we would have no paupers.

I never enjoy a man's theories about the government who cannot manage a ten-acre patch.

The worm in the whisky distillery will do more damage to the farmer this summer than the cutworm.

It seems to be a much easier thing to set down and formulate a system of national finance than it is to go to work and earn an honest dollar. Honest dollars are made only by hard work.

HOW THE NEW HOUSE WAS BUILT.

DAVID LAWRENCE, ONTARIO, CANADA.

We were eight, all told, six children, my wife and myself. We were living in the house that was moderately comfortable and quite large enough for two when we went into partnership, but as our number kept gradually increasing, the aspect of things began to change, until at the time of which I write the family began to say to me as the prophet's family did, "Behold now the place where we dwell is too straight for us." So the question came before us. It was argued that, if we wished, the old house, being a frame one, could be enlarged to suit the exigencies of the case; but the ceilings were much too low to comply with proper health regulations, and, in order to get that defect remedied, we would have to tear almost the whole house to pieces, and would consequently have no place to live in while we were rebuilding. And then to make a good, conveniently large house of the old one would involve an outlay of about two-thirds the cost of a new one. Being in the suburbs of a thriving village, it was expected that if we built a new house to suit our requirements with all the modern improvements, we could rent the original home as it was for as much yearly rental as would more than meet the interest on the additional expenditure incurred in the erection of a new house, over and above the cost of enlarging and improving the old one. So we decided for a new house. But what was it to be—frame, brick or stone? A frame house would be very good in most respects, but the cost of painting and repainting every few years loomed up in the distance. Common brick, again, did not require any painting, and in the first cost would not, perhaps, be so very much more than frame—but then, many makes of brick get so badly streaked in course of time by the weather, and the best classes of brick were so very expensive, nearly approaching the cost of a stone house. And as we had on the farm a collection of good field stones which were really in the way, we ultimately concluded that it would be better to use them in building a house, and then they would be useful as well as ornamental, in place of being an eyesore lying in the fence corners; and if we did run short, we had some generous neighbors who would gladly give us the privilege of helping to clear up their farms by removing the stones that were in their way.

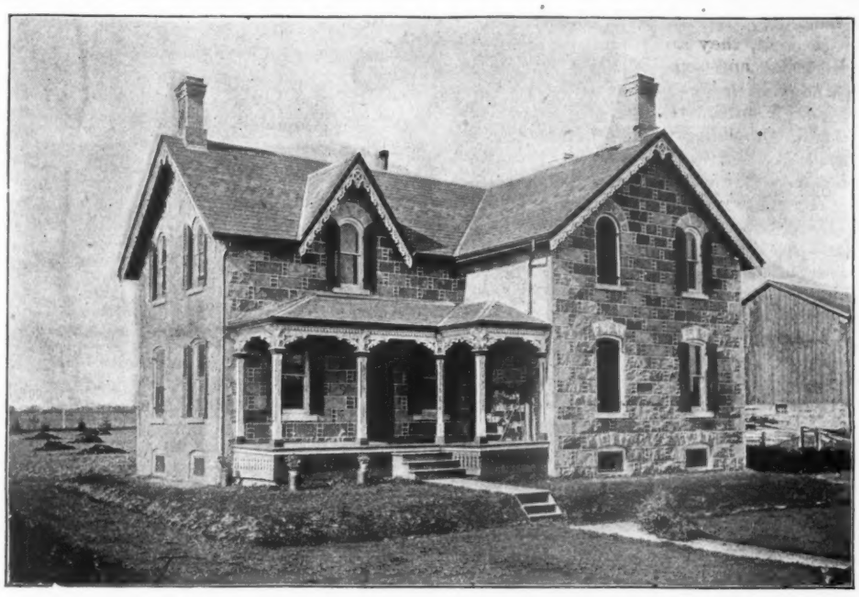


FIG. 1. PERSPECTIVE VIEW OF STONE COTTAGE.

A stone house was decided upon. Now for the plan. Having spent a small portion of my life in an architect's office, it was concluded not to let the job out. I first went around to see the greater part of the best houses that I had heard of, in order, if possible, to be able to group as many of the latest improvements and conveniences into one complete whole, and then I set to work and put the house (Fig. 1) on paper, as it is on the accompanying plans. The dining room is centrally located (Fig. 3) and is easily accessible from all parts of the house, the bathroom is, we think, much more useful and convenient on the ground floor, and is supplied from a cistern overhead that is filled from the roof, so there is no expenditure either of labor or money in the filling of it. The pantry is of easy access from either the dining room or kitchen and has ten drawers, four flour boxes and a liberal allowance of shelving, besides elevator shelves which can be let down to the cellar and pulled up again with the twentieth part of the labor that would be expended in carrying the eatables down cellar and up again. The library, or office, is a very useful, convenient, and, to me, indispensable part of the house, but if not required for that purpose it would make a beautiful bedroom. Large folding doors between the dining room and parlor allow us to throw these two rooms into one, for prayer meetings or family gatherings. The spare bedroom is off the parlor. There are five bedrooms of good size upstairs, and a large hall (Fig. 4).

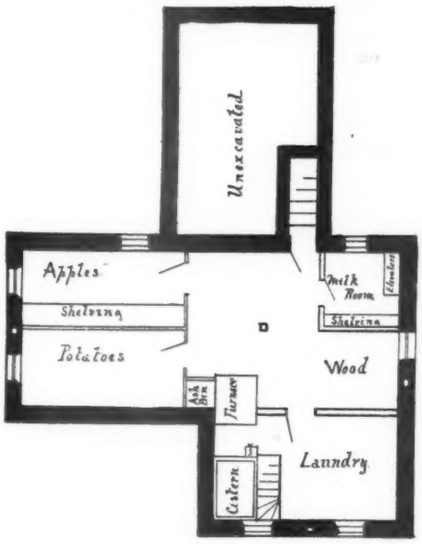


FIG. 2. PLAN OF CELLAR.

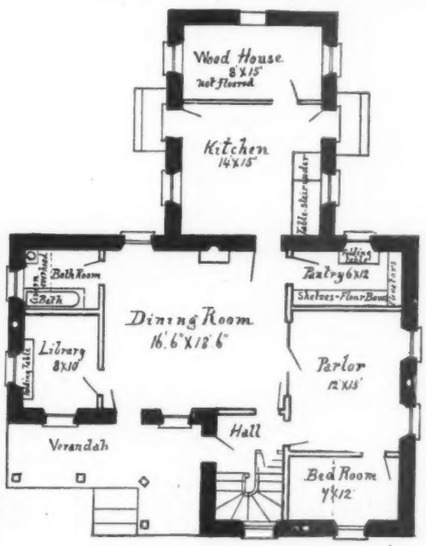


FIG. 3. PLAN OF FIRST FLOOR.

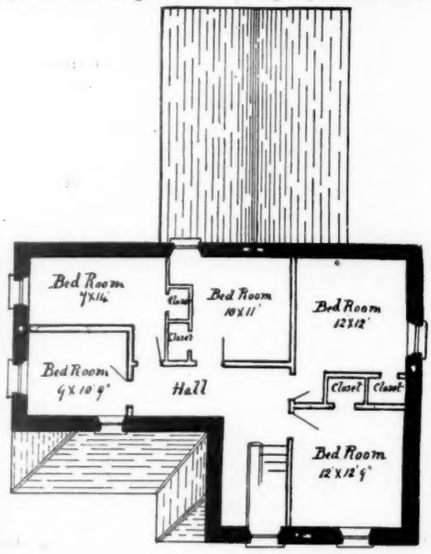
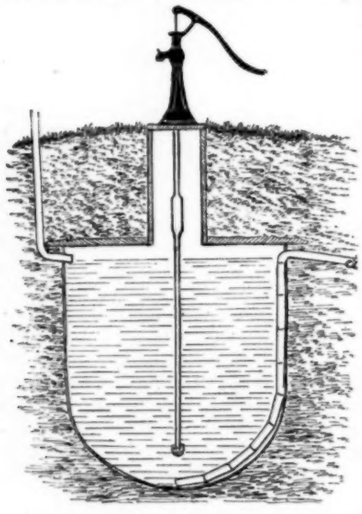


FIG. 4. PLAN OF SECOND FLOOR.

The cellar (Fig. 2) is divided into five compartments, one for potatoes, one for apples, one for milk, one as a laundry, where the clothes are washed—the water being obtained from a cistern which,

like that of the bathroom, is supplied from the roof. There is a sink connected with a drain to take away the dirty water and the overflow from the cistern. There is also a large space in the cellar set apart for wood for the furnace. The wood is stored in the fall before the wet weather sets in. The smoke pipe from the furnace goes up through the hall and front bedroom upstairs and contributes very much to the heating capacity. The cellar floor, excepting a small space under the window where the wood is thrown in, is of Portland cement, and is, I think, the best floor for a cellar. Our cellar is so dry that the best washtub, if left without water inside will go to pieces in less than two weeks. The window frames for the first and second floor are boxed, and sashes hung on pulleys by weights. Bond timbers were built into the walls and left protruding a little, to which perpendicular strapping was nailed to receive the lath, thus providing an air space. Large, oval-shaped tiles were built into the walls from the cellar to the chimney tops for flues for smoke and ventilation. The kitchen at the back is only one story without any cellar. The woodhouse is not large, but when properly filled holds one year's supply of wood.

Now as to cost. A stone house is not a cheap one, by any means, even if one has the stones for nothing. There are about four hundred and fifty perches of stone work, which, in this part of Canada, costs about one dollar per perch; this includes the dressing of corners and arches, but not sills. The slate and slating cost over two hundred dollars. The carpenter work, without any furnishing, cost about two hundred dollars, the plumbing over sixty dollars. Then there are over fourteen thousand feet of pine lumber, besides the finishing, base, wainscoting, casings, etc., which are of black ash, filled, pumiced and varnished, but not painted. The flooring is of maple, basswood and elm, and the studding is of basswood. The doors, frames and sash are of pine. There are over one thousand yards of lathing and plastering, to say nothing about the hardware, paint, oil, varnish, lime, sand, and other things, so that altogether two thousand dollars did not pay for all that had to be paid for, and without taking into account what work I did myself. I might mention that there were something like one thousand six hundred meals served to the tradesmen while working at the house, so it is obvious that our cooking and baking departments were not idle. Although a stone house is not the cheapest, I believe it is the best, being cool in summer, warm in winter, and dry at all times. [A perspective view of the stone house is shown on Page 375, as engraved from a photograph. The extreme width of the house is its frontage of forty-three feet six inches. Its depth is thirty-six feet.]



SECTION OF A SELF-CLEANING CISTERN.

HOW TO MAKE A SELF-CLEANING CISTERN.

E. B. CHARLES.

Soft water for washing purposes is a necessity. To meet this necessity cisterns of various kinds are built, but the dust lodging on the roof, together with dead leaves, and various substances whirled about by the wind, will be carried by the water into the cistern. Unless it is frequently cleaned, this fouls the water and gives it a bad odor. The illustration presented above shows a plan for a cistern so arranged as to avoid this difficulty. The overflow pipe, *a*, instead of simply entering the cistern at the surface of the water in the usual way, continues down the inner surface and opens near the bottom. Then, whenever the cistern fills with water and overflows, the surplus enters the discharge pipe at the bottom, thus carrying off whatever sediment may have been deposited. As the substances that are washed from the roof into the cistern always settle gradually to the bottom, each hard rain that fills it to overflowing forces them into the discharge pipe and carries them off to the drain. Such foul sediment forms a good nest for disease germs. Where the ground is of firm texture it is not necessary to brick up the sides, but the cement may be laid directly on the earth. Begin by laying out a circle about a foot larger across than the intended size of the cistern. Dig this size down three feet, then dig the cistern six inches smaller on all sides, thus leaving a shelf on which to place the covering stones three feet below the surface, to be out of the way of the frost. Cover it by laying on opposite sides of this shelf two long flat stones, eighteen inches apart. Then lay two other stones across the ends of these, and a man-hole eighteen inches square will be left. It is now ready for plastering. Use Portland cement, one part of cement to two of fine, clean sand, giving the sides a good layer clear up to the cover, the leader from the roof having been inserted in or near the top. Now dig a drain from some convenient point of discharge, and lay the overflow pipe by beginning at the bottom of the cistern, passing it out near the top. It may be made of common round two-inch drain tile, having that part which is in the cistern well covered with cement. When all is complete place a crib of plank over the man-hole, through which it may be entered by means of a small ladder; then cover with earth, rounding it well up.

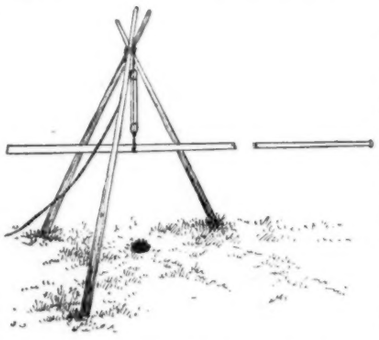


FIG. 1. RAISING A LIGHT POLE.

If a pump is used the suction pipe should be furnished with a strainer, and should reach to within a foot of the bottom of cistern. Where a cistern can be built directly under the kitchen it is very convenient to connect it with a pump over the kitchen sink. The capacity of a cistern may be approximately ascertained by allowing seven gallons to the cubic foot. Or, if it is round, multiply the diameter by the average depth, in feet, and the product by five and one-half. The result will be the capacity in gallons.

RAISING A LIBERTY POLE.

Raising a long, heavy pole is a difficult and often a dangerous work, unless suitable provision is made for the operation. Two plans are shown in the illustrations, in either of which, by the aid of a dozen men, a pole from sixty to one hundred feet in length is readily placed in an upright position. The plan in Fig. 1 is intended for a pole not over eighty feet in length, and then it should be a slender one. The center of the tripod of poles is about one foot to one side of the hole in which the pole is to stand. It is evident that the distance from the ground end of the pole to where the tackle rope is attached should be such that when the pole is pulled to the highest point it will swing clear of the ground when placed in an upright position, when it may be gradually lowered into the hole. Heavy weights may be fastened to near the bottom of the pole, allowing the tackle to be placed nearer the lower end, consequently shorter tripod poles may be used. In Fig. 2 the tripod is located eight or ten feet from the pole, which is dug in the form indicated by the dotted lines. An anchor rope, *a*, is secured to any tree, post, or building, located within twenty to a hundred feet, as the length of available rope may permit. The lower end of the pole is placed in the trough-shaped hole and the small end elevated to an angle of about twenty degrees, when the rope and tackle will readily elevate it. In both cases, the pulley and flag rope are supposed to be in position. Guy ropes should also be placed about half way up the pole; if they are simply wound about the pole three or four times they will hold firmly, and when the pole is secured in an upright position, are easily taken

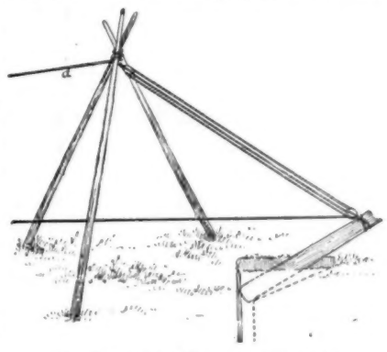


FIG. 2. RAISING A HEAVY POLE.

down by simply walking around the pole with one of the ropes, unwinding the same. Use none but strong ropes, and attend to all details in a most careful manner. In the plan in Fig. 2, place a strong board upright in the holes for the end of pole to press against, otherwise much earth will be loosened and, falling in, will partly fill the excavation.

A MODEL PIGGERY.

Breeders of thoroughbred strains of swine not only wish to have a neat building for their fine stock, but also one which will permit the separation of many individuals. The accompanying

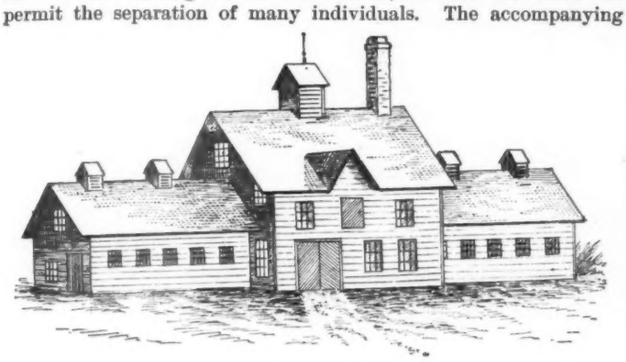


FIG. 1. PERSPECTIVE VIEW OF MODEL PIGGERY.

illustrations, from sketches by H. C. Brown, of Massachusetts, present in Fig. 1 the elevation, and in Fig. 2 the ground plan of such an ornamental structure. This model piggery is fitted with conveniences for easily caring for from one hundred to one hundred and twenty-five pigs. The box, *a*, by the window is to receive the swill, and the truck, *c*, in the passage way is to hold the mixed feed of swill, grain and hot water, or milk from the set boilers, *b*, and from the truck the pigs are fed as it is drawn from one end of the passage to the other. The four pens, which come in the center behind the killing room, and the boiler room, *d*, can be shut off from the pens on each side of them, and so are much warmer, and can be used by the breeders while the pigs are quite small. The other pens are to accommodate six large pigs or ten small ones. The upper story of the center square is used for the storage of grain and of straw for bedding.

WHERE ASTRAKHAN SKINS COME FROM.

The true Astrakhan skin, sometimes called fur, is the skin of the stillborn Astrakhan lamb. The people of the province of Astrakhan know at what time the skin of the unborn lamb arrives at the

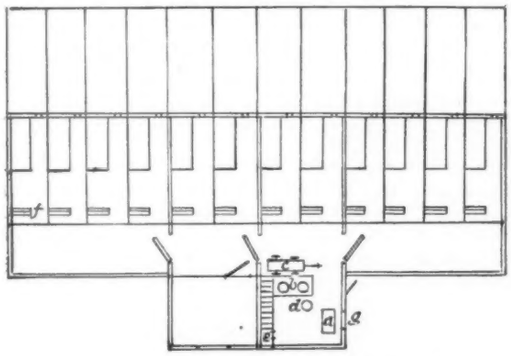
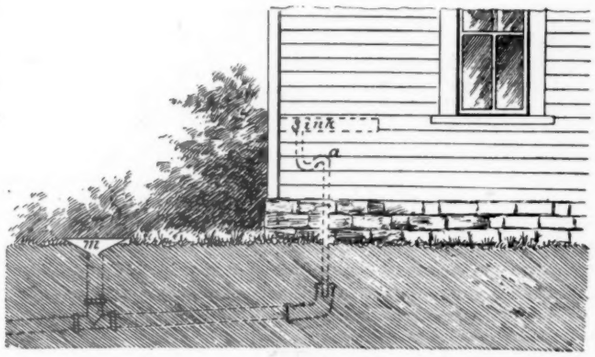


FIG. 2. GROUND PLAN OF PIGGERY.

desirable state when the wool is just at the most valuable point, and the mother is slain to secure the lamb's skin. It is a profitable sort of sheep industry, since the demand for the skins comes from wealthy people the world over. The supply is so largely behind the wants of the trade that there are many substitutes and imitations on the market. In view of the fact that every Astrakhan lamb skin costs the life of both mother and offspring, it is shocking to humane people that such a practice should be necessary to supply the demands of cultivated and refined ladies. But the industry is profitable. There is no great loss in this double slaughter, as both skins, dam and lamb, are secured, and for all we know the ewe's flesh is used as food. Youatt tells us that the flesh of the unborn lamb is esteemed a delicacy, and sells readily for food. Those lamb skins which are black and glossy are most highly esteemed. The inhabitants of Tartary do not kill the ewes, but destroy the ram lambs as soon as they are born, selecting such as have curly fleeces, and especially of the most desirable colors.

A COMBINED SINK AND SLOP DRAIN.

How to dispose of the sink and slop water in a safe and expeditious manner is what greatly perplexes many residents in the country. In cities where there is the benefit of water works and sewers, this is an easy matter. A simple plan whereby this may be accomplished is shown in the illustration herewith. The dotted lines indicate the location of the sink. The common outlet pipe passes downward in the usual manner, but immediately underneath the sink or under the floor, as most convenient, a foul air trap is made by simply bending the lead pipe in the form shown at *a*; it should extend upward at the bend a little more than the diameter of the pipe, so that the pipe at the lowest point of the bend will always remain full of water. This, of course, prevents the sewer gas from escaping into the room. Every time the sink is used the water remaining in the pipe is forced out by the weight of the new addition. This is one of the most simple lessons in hydraulics, and of great value when rightly put in practice. It is well also to flush the sink pipe occasionally with strong washing soda, letting it stand in the trap all night. The refuse water from the weekly wash, mopping or scrubbing, may be emptied into the funnel at *m*, and be carried off by the drain. This funnel is of wood one foot square at the top, tapering to the diameter of pipe. The drain pipe should be at least four inches in diameter and placed below frost, and discharged five or six rods from the dwelling, so that the water will



SAFE METHOD OF DISPOSING OF SLOPS.

spread over a large area and quickly evaporate. The sink outlet pipe should be one inch in diameter, either of lead or iron. The funnel also acts as a ventilator for the drain, and should not be located nearer than fifteen feet from the building. Cast iron pipe is best for the drain, as sewer pipe or wood, unless the joints are cemented, is liable to leak, which will prove dangerous to the well and cellar.

A CHEAP, EFFECTIVE AND DURABLE FENCE.

J. S. WOODWARD, NEW YORK.

As our country becomes cleared of timber the question of fencing increases in importance. Nothing will more quickly make trouble between adjoining neighbors than an insufficient fence, and nothing makes a farm look so forlorn and undesirable as an old, dilapidated, tumble-down apology for a fence. Rail fences, at their best, take up too much land, and are a harbor for noxious weeds and rubbish. Besides they are unstable, easily blown down, and

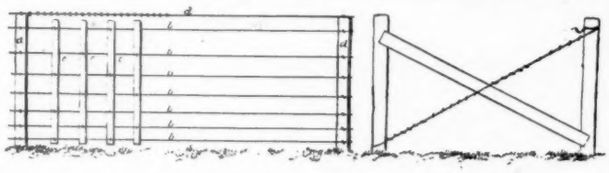


FIG. 1. SECTION OF FENCE. FIG. 2. END BRACE.

very expensive to build. Board and post fences, when new, look well and are very effective, but they catch a good deal of wind, and

cause the snow to drift badly; the boards soon loosen and come off, and thenceforth they must be constantly watched. They are still more expensive than rail fences. Straight wire fences, if put up tight enough to avoid sagging in hot weather, will so contract, when the mercury gets down in the zero region, that some of the wires will break, or the end post will pull out or pull over; then, when hot weather comes again, the wires will be slack, and hogs or sheep will slip through them as readily as eels through a pump log.

I have been building during the last two years, a fence which proves very satisfactory, a section of which is shown in the illustration Fig. 1, Page 377. The posts, *a*, are set thirty feet apart. They are seven and one-half feet long, set three feet in the ground. The end posts should be firmly braced. For this purpose set an extra post twelve or fourteen feet from either end. Cut a scarf near the top of the end post, and the bottom of the next one (be sure it is above ground), fitting a brace from one to the other into these scarfs. After this brace is in place make a loop of the wire about the bottom of the end post and top of the next, straddling the brace. It is well to wind the ends of this wire around the top of inside post, and twist them firmly together. Now put a short stick between the wires and twist them up until quite tight. This arrangement is shown in the illustration Fig. 2, and will hold the posts from sagging for all time.

When this is done, stretch upon the posts seven strands of No. 9 galvanized wire, putting the first three inches from the ground and the other above but distant from each other as follows: Four inches, five inches, six inches, eight inches, ten inches and twelve inches. This will make the upper wire four feet from the ground and the fence four and one-half feet high when finished. Pickets or slats should have been procured four feet long and one and a half or two inches wide by three-fourths inch thick. These may be split or sawed from any timber on the farm, or can be bought at lumber mills. Commence two feet from the end post and weave the picket in over one wire and under the other. Two feet from that picket place the next, reversing the wires. Thus continue weaving in the pickets or slats like the filling in cloth. The upper end of the pickets should extend two inches above the top wire, and this will bring the lower end one inch below the bottom wire. When the pickets are placed, each wire should be fastened to each picket by galvanized iron staples, such as are used for putting up the so-called "chicken wire." These should be set inclined over wire driven through the picket and clinched on the other side. Of course every other wire passed on the opposite side of picket, and the staples should be driven accordingly. This can best be done by two persons, one on each side of the fence, each having a bag of staples and a hammer. When completed thus far, a strand of barbed wire, a linked wire with the barbs close together, should be stretched on top of the posts and firmly stapled to each one by two staples. This upper wire will be four inches above the top of the pickets, four and one-half feet from the ground. It will be so stiff that a heavy man can climb over it anywhere, and so strong that no animal can get through it. The elasticity of the wood pickets will allow for the expansion and contraction of the wire by heat and cold, and what is better than all else, while it is so very good it is cheap. Mine cost less than forty cents per rod, for all expenses.

SMOKE IN BEE MANAGEMENT.

W. Z. HUTCHINSON.

Smoke has a very subduing effect upon bees, and its use has become such an important factor that without it many of the processes in modern bee management would be impracticable. The primitive method of administering smoke was to light the end of a half-decayed stick of wood, and then by means of the breath blow the resulting reek, which was generally about equally divided between the bees and the lungs of the operator. But the successive inventions and improvements of the late Moses Quimby, T. F. Bingham, and T. E. Crane, have given us appliances which render the process of smoking bees safe and easy. The usual form of a smoker is a bellows for blowing a current of air through the fire, which is kept in a proper receptacle between the bellows and the nozzle. A valve is provided, which opens and supplies a draft of air to the fire box, when the action of the smoker is momentarily suspended, but closes at the least current of air from the bellows. The efficiency of the smoker depends very largely upon the character of the fuel used. Half-decayed elm makes a great smoke, but soon burns out; seasoned maple, cut to three-inch lengths and split fine, makes a lasting and clean smoke, but evolves much heat. The most satisfactory fuel the writer has used consists of shavings from a planing mill or turning lathe. When once ignited, they will smoulder for hours, yet a puff or two from the bellows will send out clouds of smoke. To light them, it is necessary to introduce a few in the fire barrel, dash in a little kerosene, apply a lighted match, and then add more shavings, a few at a time, working the bellows meanwhile, until all are ignited. It is kept going by gradual additions of shavings as the first ones burn out.

Some bee-keepers use too much smoke, or at the wrong time. It should be blown in at the entrance before the hive is touched. If bees are excited to anger, by a jar, it is difficult, and sometimes impracticable to quiet them by smoke. But if they are first dazed by smoke the subsequent jarring only increases their subjection. After the cover has been removed from the hive, it is well to drive the bees down by a few puffs, and then watch them. If they show a disposition to come up and dart at the face and hands, give them more smoke. But there is no sense in driving them wholly out of the hive by great volumes of smoke.

PACKING BUTTER IN SMALL DAIRIES.

M. G. EDWIN.

Creamery butter has an advantage of uniformity over that produced in small private dairies. The dairy churning is large, the cream has been ripened all together uniformly; the churning is all made at one time, and hence the entire butter product for that day is of uniform flavor, texture and color. A tub can be filled at one time, and the merchant who buys or sells it will find the butter exactly the same in quality from top to bottom of the tub.

In the small private dairy every churning, of course, is of even quality of product, but one day's product is sometimes not large enough to fill a tub; and hence the different days' churnings required to complete the filling are likely to show some difference in color and general quality, and therefore the butter will not grade evenly in the tub, and this lack of uniformity results in a lower price. In reality, the butter from the small dairy may be as good, fresh, and possibly a better article than the other, but this lack of uniformity detracts from its marketable value where butter is graded by experts.

Butter from these small dairies should be sold in prints of one pound each. If a cream separator is used in the small private dairy, and the cream ripened day by day at the same temperature, the butter is likely to be of a more uniform quality, and will grade uniformly, the same as the creamery article; but as a rule, comparatively few small dairies use the separator. The farm butter may be sold to advantage in small packages of from one to five pounds.

SUMMER CARE OF SHEEP.

In the hot days of the midsummer it is a trying time for the sheep with their flannel coats under the hot sun, or during sultry days. At such times the sheep should never go unseen more than half a day. They are apt to suffer from looseness of the bowels at such a time, and while this is not of itself of any serious import, yet it attracts the flies, and once fly blown and neglected, a sheep becomes the sorriest, most woe-begone animal in existence. Under such extreme misery the wretched animal hides itself in some fence corner, or a thicket, and gives up, slowly perishing without complaint or effort to resist. The shepherd therefore must watch the flock, and, as a precaution, count them every time he sees them. The ewes from whom lambs have been taken may need to be milked, and, if this is neglected, the udder may become swollen, and possibly sore, and blown by the flies; or a mere scratch on any part may become blown, and once the maggots make an entrance in any way it is a difficult matter to dislodge them. The best application to any sore or wound on a sheep is tar; it covers the spot with a dry film, and its odor is offensive to flies, while it has a stimulating effect on a wound that hastens healing. Crude petroleum is also useful in this way. The feet are not to be forgotten. They should be examined weekly lest some grit may gather under the sole and make it sore, and the filth, poisoning the wound, will quickly produce the first appearance of foot rot. This is most important to be done when the weather is wet, and the filth is more apt to gather and remain as an irritating matter under the softened crust of the hoof. The hoof should be kept free of all ragged horn by paring.

Halter for Horses that Roll.—A horse that is addicted to rolling and getting cast should wear a halter with a ring fastened to the top between the ears. Snap a rope or strap in this so he cannot lay his head down flat, and thus tied there will be no further trouble.

POLLED DURHAM CATTLE.

GEORGE A. MARTIN.

The rise and progress of the class of cattle known as Polled Durham are largely due to the widespread and growing feeling of opposition to the presence of horns on domestic cattle. The "dehorning movement" has kept on, against all obstacles thrown in its way; thousands of horns have been removed, and an extensive trade has grown up in the sale of clippers and other implements made for dehorning purposes. At the very beginning of the dehorning, and even earlier, several enterprising breeders of Shorthorn cattle observed in their respective herds some young animals which grew to maturity destitute of horns. Without any concerted action, or even mutual information, each one carefully interbred these polled animals, finding that a large percentage of the first progeny inherited the polled condition, which in a few generations had become a fixed characteristic. These polled cattle were nearly if not quite all pure-bred, and eligible to registration in the Shorthorn herdbook. But the breeders, when they discovered how numerous the polled animals had become, met together and organized an independent record association. As the modern name of the breed from which the hornless animals sprang would be wholly inapplicable, the breeders went back to the good old name, and called them Polled Durhams. Their characteristics in everything except horns are the same as those of the lordly race of which they are an offshoot—the race which has done more to raise the general standard of American cattle than all other breeds combined. The early maturity, easy fattening, mellow skin, excellent quality of beef, and blocky form, which have given to the original race a world-wide fame, are retained by its polled descendants, who have the added advantage of being hornless. No description could convey so accurate an idea of the form as can be gained from an inspection of the accompanying illustration. It is a portrait of the typical Polled Durham bull, Young Hamilton, bred and owned by J. H. Miller, of Indiana. The bull was exhibited at the World's Fair in Chicago, where he was awarded the first premium in his class, the sweepstakes in his class, and the grand sweepstakes in the general purpose ring. The same year he also won the first premiums at the Indiana State Fair, and at St. Louis was awarded first and sweepstakes. He was calved in June, 1890, is dark red, very broad and thick, with great depth of body, and short legs. His weight at Chicago was twenty-five hundred pounds.

YOUNG HAMILTON, THE GRAND SWEEPSTAKES WINNER.

The Polled Durham is the first hornless race to originate in this country, which numbers among its domestic cattle the representatives of four polled races of European origin. These are the Galloway and Aberdeen-Angus of Scotland, the Red Polled, whose original habitat is in the eastern counties of England, and the White Polled cattle, which are not numerous in England, and only a few have ever been imported. The Polled Durhams possess the best characteristics of the other hornless breeds, with many other excellent points of their own. The very timely advent of the breed is a matter of much importance to American live stock interests.

ASEPTIC MILK UTENSILS.

GEORGE E. NEWELL, NEW YORK.

That all utensils which come in contact with milk and crude cheese material should be kept free from the contamination of putrefactive products is well known by all. But in making utensils convenient for manual use, too little thought is put upon their construction with a view to aseptic conditions. It is one thing to say "wash and scald that utensil every day," and quite another to have it so formed as to be capable of free and easy cleansing. Avoid ridges of soldering in all tin utensils used about milk, cream, cheese, or butter. They offer crevices and cracks in which organic matter can collect and putrefy in spite of ordinary cleansing.

In cheese making we have milk starting in its alkaline purity and ending in acid curd, the process taking place in one receptacle, the vat. If the germs of this acid fermentation are not thoroughly eradicated, they are present the next day with an increased power to change the character of the milk faster than the natural process of cheese-making will do it. But this is not all, for a more dangerous infection comes from the microbes of putrefaction, multiplying in the decaying casein and butter fat clinging to the soldered cracks. No vats should be used in dairy manufacturing that are made of small squares of tin patched together, as it is too difficult to keep them aseptically clean and pure. Most of the modern vats are made with few seams, although many of the old style remain in use through mistaken economy. Vats made of broad sheets of tin smoothly soldered where the sheets meet in the short diameter of the vat, are preferable to all others. Especially should the seams not come in the corners or the bottom angles, as here the tin should be continuous and smooth. Smaller utensils, such as scoops, pails, or dippers, should be made of heavy tin pressed into shape rather than soldered together from sections. After using, wash all utensils thoroughly with warm water in which a little salsoda has been dissolved, about a teaspoonful to the gallon. Then scald either with boiling water or a blast of cleansing steam from the boiler, in which the utensil should be enveloped for a full minute. The tools should then be wiped with a dry cloth and hung in a dry place. If they contain no rough places to shield injurious bacteria they are in a suitable condition to be used about milk. The principle of aseptic construction for milk utensils is just as important in the home farm dairy as in the factory. Indeed, the lack of it in the former would defeat the use of it in the latter.

I have traced many cases of "taint," or poisonous fermentation in milk, to the accumulation of filth in the seams and under the rough soldering of milk cans. Ordinary cleansing would not prevent the trouble, and new cans containing no places for the concealment of decaying organic matter were indicated as the only proper means to stop it. For the same reason all cloth strainers used about milk should be sterilized every day by continued boiling. Simply dipping them in hot water is not enough.

GALLOWAY CATTLE FOR THE SOUTH.

EDWIN MONTGOMERY, MISSISSIPPI.

For a very long time the writer has had a favorable impression as to the adaptability, superior value and peculiar fitness of the Galloway cattle for the Southern States. For years, through the agricultural press, he has endeavored to interest Southern breeders and prospective breeders in the claims and merits of the breed. The Galloway wears a rough coat, and has not the elegant form, silken hair and fine appearance of its near relative, the Aberdeen-Angus. The difference is the natural effect of differing conditions of climate, soil, herbage and care in their native habitats. The Galloway originated in Southwestern Scotland, where the land is poor, the grass is scant, where there is much mist and rain and cloudy weather. No artificial shelter is provided, and but little feed save what the meager pastures afford. Thus, the peculiarity of climate, the vicissitudes of weather and the adaptability to "roughing it," account for the long, shaggy coat of hair and the coarse general appearance of the animal.

On the other hand, the Aberdeen-Angus, a direct descendant of the same original wild stock, no doubt possessing so many of the selfsame individual characteristics, is a product of Northern Scotland, where the soil is rich, the grasses more luxuriant and rich, the grain crops more varied and abundant, the shelters better, the climatic conditions more favorable, and the farmers more progressive and skilled in farming and stock breeding. One of the varieties of this breed is the result of climate and native surroundings alone, while the other is the master product and achievement of better climate and natural surroundings, combined with superior skill in handling, mating and breeding.

The Galloway then being a native of a climate in no wise severe, and of a region where the herbage is scant and coarse, would seem to be admirably suited to our Gulf and South Atlantic States, where the general native pasturage would well support the breed, and keep it up to its present standard; in fact, we believe it would be much improved and more highly perfected here than upon its native heath.

On the broad, treeless plains of the Northwest, where the grass is small and scant, and parched by a relentless summer sun; where, in winter, the ground is more or less covered with snow, and the fierce winds blow in icy blasts across the wide expanse, Galloways bear the brunt of the worst elements of weather and overcome the most unfavorable conditions of soil and food. There they prove their vigorous constitutional stamina and hardiness.

In our more genial Southern country, of more moderated extremes of weather, where the grass is green the year round, the herbage is rich and varied, and the climatic conditions are less rigid, it would seem that this breed of cattle might not only thrive well, but, in a few generations, develop into far better animals than distinguish the breed to-day. In certain sections of the South, where the lands are above the average in fertility, and where special attention is being devoted to grass and small grain, the Galloway might be molded into an animal that would, in superior beef value, put all other breeds in this climate in the background.

The absence of horns is a decided advantage. Horns on domestic cattle, in these days of advanced civilization, are useless appendages that subserve no really useful purpose. In their wild state horns were a necessary defense of the bovine race, but domestic cattle have no use for them now. A few years ago the Mississippi Agricultural and Mechanical College raised a number of grade Galloways and stall-fed them for beef. The results showed that no other improved breed of cattle responded so rapidly and made such steady gains in flesh as did these grade Galloways.

LATE-HATCHED CHICKS.

WEBB DONNELL, MAINE.

Many poultry raisers have little success with late-hatched chicks. A fruitful cause of loss with chickens hatched in June, July and during the first part of August is the rapid multiplication of vermin, and their greatly increased activity at that season of the year. This undoubtedly, in no small number of cases, causes the lack of growth that by many is attributed to hot weather. The heat, even of midsummer, is rarely ever greater than is enjoyed by young chickens, and if they are kept free from vermin at this time, and are surrounded by the proper conditions of food, drink and cleanliness, they ought to make rapid growth.

If chickens are to be hatched late, it is important that they be of a quickly maturing breed, so that they may be laying before winter sets in, otherwise there will be no eggs and no income from them until spring. Plymouth Rocks and Brahmas hatched in June or July can hardly be laying before cold weather, but Leghorns hatched in July may be expected, if proper care is given to secure rapid development, to begin laying before exceedingly cold weather makes its appearance. This is a point that should not be overlooked, for on it very largely depends the question of whether they are to be profitable or not.

Late-hatched chicks certainly are not profitable unless they are laying in the time of the high prices of winter, and, still further, unless they can be given such comfortable quarters as to secure continuous laying during the winter. There need be no prejudice against hatching chickens in June and July, but let them be of a breed that matures rapidly and lays prolifically, and keep them free from vermin, which is the prevailing pest of hot weather.

Neat Poultry.—The poultry that is sent to the market should be in a neat condition. The pin feathers should be carefully removed, the skin kept as unbroken as possible, and, if drawn, the inside carefully wiped out, all blood stains removed, and the shanks and feet carefully sponged from all impurities. The condition in which the poultry is offered will make quite a difference in the readiness of the sale, and sometimes in the price per pound. It will be easy to lose a cent or two per pound from the price by offering the poultry in an unfit condition, and as this amount can be secured by a little extra care, the loss of such extra profit is entirely inexcusable.

SUCCESS WITH CHICKS.

GEORGE E. HOWARD.

Perhaps no one feature of poultry raising has so many difficulties attached to it as the care and raising of chicks. It is not so difficult to hatch a fine brood, but to properly raise it requires considerable time and attention. To have success with poultry it is necessary to consider the details of the work. In the chicks one must look for the laying stock the next fall and winter, and bear in mind that every chick counts when adding up the total for the season.

The best results in raising chicks have been obtained by completely controlling them at all times; that is, by putting each brood in a separate coop and run, where every attention may be given to their welfare and comfort. By such an arrangement not only is labor saved, but the brood is free from the annoyances and inconveniences of other poultry. Experience has taught me that this is the right way to care for them, and the casualties resulting therefrom have, indeed, been small when compared with previous efforts in this line. In building the coop consider first the dryness of the same; take every precaution to make it waterproof, for nothing is more detrimental to the little chicks than dampness. Numerous losses are occasioned by their becoming chilled with the wet, which results in diarrhea and death. It matters not how the coops are built, whether of a drygoods box or specially constructed; see that it has a floor to shut out the dampness from the ground, and a roof that sheds rain.

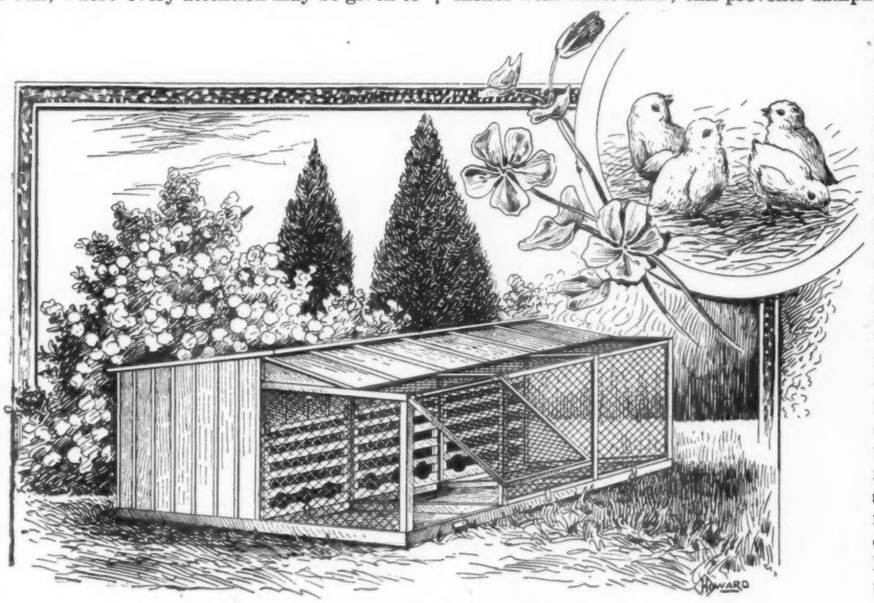


FIG. 1. PERSPECTIVE VIEW OF IMPROVED CHICKEN COOP.

The coops shown in the illustrations will avert many inconveniences. In this plan the coops are built three in number, on the same principle that poultry houses are arranged to contain a variety of fowls with separate runs attached. Each division is separate and can be used for one, two or three broods at a time, if desired. The general custom is to have individual coops placed promiscuously around the yard; by this arrangement they are in one spot and easy of attention, saving much labor when a number of broods are hatched at one time. When the hens and broods are allowed to roam at will for the first three weeks, there is no telling how many may be lost before they attain the age to resist the variations of the weather and to care for themselves. By confining them for two or three weeks they are enabled to receive every attention needed for their rapid growth and development; in the coops here shown they are free from the molestation of the older birds, or the angry peck of an ill-natured hen as they scramble for food and drink. The mother hen has nothing to detract her attention from the young, and performs her maternal duties in a motherly way, to the advantage of the youngsters.

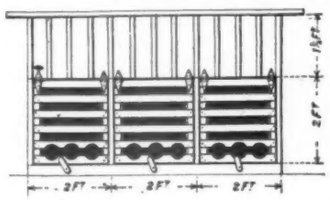


FIG. 2. FRONT ELEVATION.

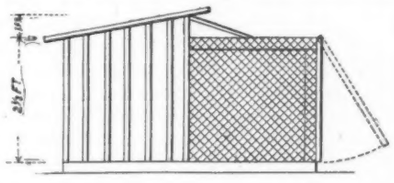


FIG. 3. SIDE ELEVATION.

The ground plan of the coop is six feet square, with three divisions two by six feet each. One-half of the frame is covered with matched boards, to serve as a floor for the inclosed part. The highest part is three and one-half feet, sloping toward the rear; the open portions are covered with one-inch wire mesh. The partitions of the inclosure are solid boards two feet high, with laths at the top to afford ventilation; the partitions of wire runs are made of laths, placed one-half inch apart, to avoid fighting between the hens, but permit a free passage of air from one space to the other.

The roof should be made as close as possible, and covered with tarred paper to insure dryness within; the sides should be built of even boards and stripped over the cracks with one-half by three-inch strips. Place dry earth on the floors of the inclosed parts one inch thick, and a little straw in the rear for the hens and chicks to lie on. In the wired parts cover the ground to a thickness of two inches with white sand; this prevents dampness after a rain. Keep the entire coop well cleaned and whitewashed, and occasionally sprinkle insect powder in the corners to keep out vermin. Place water in fountains in the runs; scatter the grain food on the ground and feed the soft food in pans to avoid the waste parts souring on the ground. Never feed or place the water fountains in the closed part, as this is intended for roosting only. When taking the hen and brood from the nest, they should be kept in the roosting part for a couple of days; the lattice door separating the coop and the run should be closed during this time to keep the hen confined, but the brood may have free access through the lattice door to the run. After this, the lattice door may be kept raised, and the hen and brood can use the entire space of house and run. When the chicks have grown sufficiently strong, the outer door may be raised, and the brood can range on the grass during good weather, and be cooped here at night until the hen leaves them, when they should have free range to themselves and be cooped in a different house until they are ready for the pens in the fall. [A perspective view of such a set of coops is shown in Fig 1; in Fig. 2 is seen the front elevation without the wire frame. The side elevation is shown in Fig. 3, and the ground plan in Fig. 4.]

Work for Rainy Days.—By far too many farmers and their laborers consider the rainy days as sacred to rest and inactivity. The thrifty, successful farmer, however, usually has plenty of indoor work planned for this inclement weather. The harness is to be cleaned and properly oiled, the stable floors are to be mended, tools and wagons repaired, gates made, the compost heap in the basement handled over, and a hundred other little jobs attended to. The team may need shoeing; if so, let the man take them to the shop. He will do more favors in the future than if kept working on the farm all the time, and these little things show that you have confidence in him. He will fully appreciate the situation, and not find fault if, in the rush of work, late hours sometimes find him in the field, and will look after your interest in the proper care of live stock and the attention to details that will make many dollars difference in your favor at the end of the year. The tasks planned for rainy days should be such as can be done under, or near to shelter. In the latter case, the intervals between showers may be utilized. It rarely pays any farmer to work outdoors when it is raining.

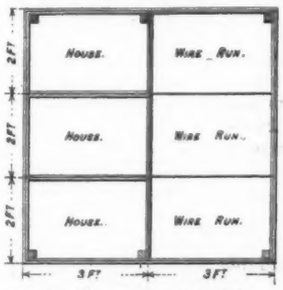


FIG. 4. GROUND PLAN.

ARE WHITE FOWLS TENDER.

H. S. BABCOCK.

There is extant a feeling that white fowls are much less hardy than colored ones. It seems almost impossible to get reliable statistics to base a conclusion upon for this, as one must consult those who have white fowls, and their opinion is necessarily biased by their personal interest. I can, therefore, give only a little beyond my own personal experience. I have bred five varieties of white fowls, besides a large number of colored varieties. The first white fowl which I bred was the Leghorn, and my experience with it was extremely satisfactory. I found it fully as hardy as the brown, and liked it better for other reasons. The other four varieties of white fowls, whose names I do not wish to give, for fear that self-interest might be thought to be the cause of my writing as I do, I found less hardy than colored varieties of the same breeds. The mortality among them was greater, and they seemed more liable to disease. The difference was not great, perhaps, but such difference as existed was in favor of the colored varieties. The male birds, especially, were liable to loss of vigor and sudden death.

Some time ago I was talking with a large breeder of poultry, who kept a number of varieties, some of which were white, and he expressed a similar opinion. He said that he did not dare to go through a season without spare male birds for his yards of white fowls. It is quite possible that his experience and mine are exceptional, that there was in our surroundings something peculiarly unfavorable to the white varieties we kept. But both of us continued to keep the white fowls, for we found them possessed of certain advantages which made them profitable, although they seemed less hardy than the colored ones. I can see no good reason why a white fowl should be less hardy than a colored one. Arctic animals that have to endure the severities of a frigid climate, are clothed in white. A white garment is cooler than a colored one in winter, if of the same material and quality, but one should not, therefore, suspect white to be a sign of lack of vigor in fowls. To be sure, as we grow old, our hair turns white, and black fowls and colored animals sometimes show a tendency in this direction. In such cases white is an evidence of loss of vigor from age, but we have all known young men, in full vigor, whose hair had turned almost white, and whose powers had suffered no decrease with the loss of coloring matter in their hair.

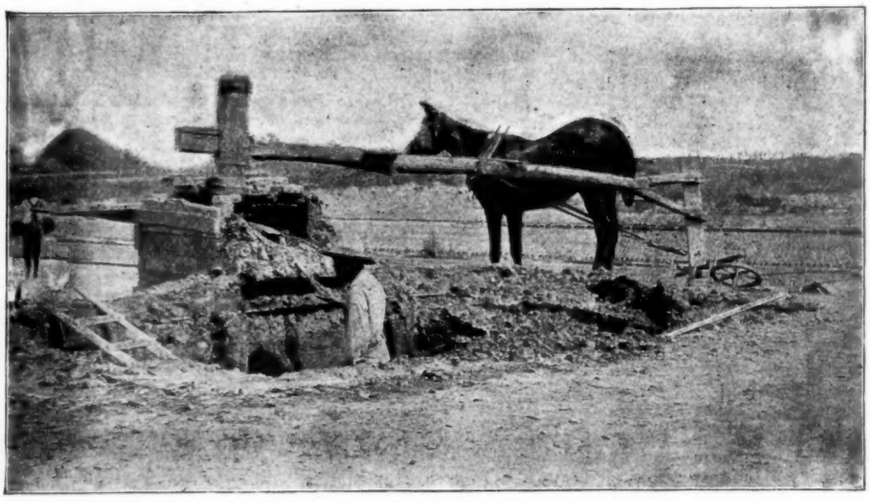


Fig. 1. FEEDING THE MILL FROM THE PIT.

If all white fowls are the result, immediate or remote, of albinism, as some of them certainly are, and all of them probably are, and if they really are less hardy than colored varieties of the same breed kept under the same circumstances, then we convict albinism of a lack of vigor. Color is skin deep, secreted by glands located in the skin, which glands draw their supply from the blood, separating such coloring particles as they can use. But, perhaps, color is deeper than the skin: perhaps the glands are influenced in the selection of coloring material by what the blood contains; we know that in the case of cayenne fed canaries the pale color is turned into a deep reddish-buff, and if the cayenne is not fed at the proper time —moulting—the bird becomes one of ordinary color. In this case color is more than skin deep. It is possible that such is the case with white fowls, that not only the glands are incapable of secreting other than white coloring material from the blood, but that the blood itself is deficient in such other coloring matter. I do not say that it is so, I only suggest it as a possibility. If this possibility exists, if the fowls' blood is really different in this respect, though fed on the same food as other fowls are that produce colored plumage, then there is also a difference in digestive or assimilative capacity, and, of course, the fowl becomes somewhat different throughout. Hardiness, under such circumstances, might vary with color, though the white fowl might be the hardier one.

The question which is the hardier is one of evidence, not of theory, but if theory gives us a clue, showing there is a substantial difference in digestion and assimilation, then we are in a position to expect evidence upon the point to be worth the obtaining and examining. So far as I have been able to obtain evidence, there does seem to be a difference between white and colored fowls in hardiness, and the colored ones seem to be somewhat the hardier, except in the case of the Leghorn. But this evidence has not shown a very marked difference in hardiness, not enough, at any rate, to deter one who preferred white fowls from keeping them. In justice to white fowls, let me further say that nearly every breeder of them declares them to be perfectly hardy, and perhaps in his yards they are. They certainly, when kept clean, are very beautiful. On a green lawn there is no prettier sight than a flock of pure white fowls, whose plumage is not stained or soiled.

MATING BARRED PLYMOUTH ROCKS.

R. I. BEEBE.

The breeder of the Barred Plymouth Rock, in addition to the problem of shape, common to all breeds, has the special problem of color to solve. To do this he makes two matings, one for the production of females, the other for the production of males. He has learned that the fashionable shades of the sexes are such that the union of two possessing these does not bring chickens like themselves. The females have a tendency toward darkness, the males toward lightness in color. That it would be possible in time to produce a strain that would breed exhibition specimens from a single mating he does not doubt, but he does not feel that he can afford to make the sacrifice in time and money that the production of such a strain would require. He prefers, therefore, to make special matings. To him "a bird in the hand is worth two in the bush," a certain present profit is much better than an uncertain future profit, even though the latter may in time be greater. For the production of his exhibition male birds he selects a male that is of the desired shade, and mates him to females that are somewhat darker than himself, but otherwise good birds. He expects to produce finely colored cockerels and pullets that are altogether too dark, some, indeed, being as black as crows. For the production of his exhibition pullets he selects a very light male, one whose bars are extremely narrow and in which the light color greatly predominates over the dark, a bird utterly unfit to exhibit. To him he mates his fine exhibition females. From this mating he expects to produce beautiful, lightish-colored pullets, and cockerels very much like their sire. It will be observed, except for the purpose of breeding again, the first mating produces almost all of the females as culls and the second nearly all the males. There will be, however, an occasional pullet from the cockerel mating and an occasional cockerel from the pullet mating that will be really fine exhibition birds. The production of these seems to be proof of the possibility of the making of a strain where but a single mating will be required, but few, indeed, are the breeders who have the necessary patience and perseverance for the production of such a strain.

Timely Work.—There is economy of time, and labor, and health in managing so that one will not have too many irons in the fire at one time. This can only be prevented by looking ahead and doing many things during slack times, which prepare for future work.

BRICKS AND BRICKMAKING.

W. Z. HUTCHINSON, MICHIGAN.

Most people know in a general sort of way that bricks are made of moistened clay, dried in the sun, and then burned or baked in a kiln; but comparatively few have witnessed, or have a knowledge of the processes that are followed in changing the clay to finished brick. Within half a mile of my home is a brickyard, where the number of bricks made each summer runs up into the millions. To get the clay for the bricks, the surface soil is first scraped off, then the clay is loosened with a pick, after which it is shoveled into a cart, from which it is dumped into a board-lined pit dug in the ground, water being mixed with the clay as the pit is being filled.

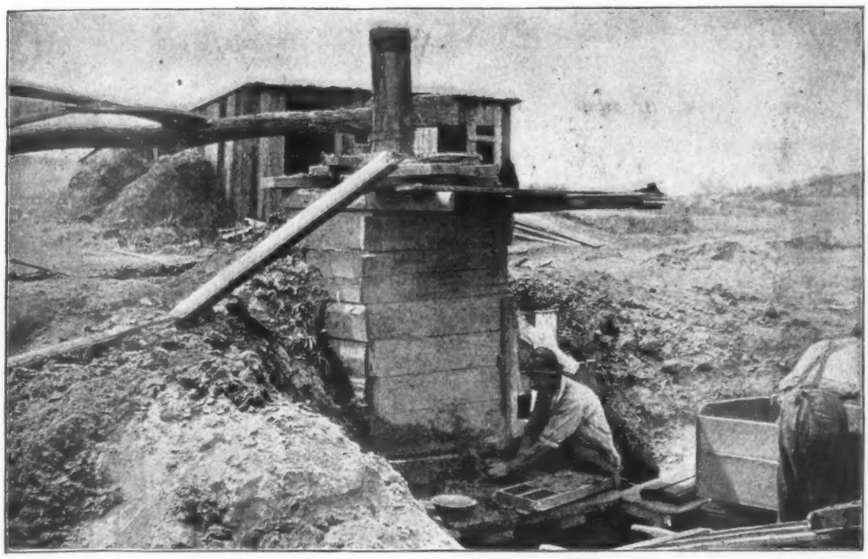


Fig. 2. SANDING AND FILLING THE MOLDS FOR BRICK.

After soaking all night the brick clay becomes so soft and plastic that the hand can easily press it into any shape; but before being molded into brick it is first thoroughly ground and mixed by passing it through what is called a "mill." This mill is a plank box four feet square by eight feet in height, in the center of which is an upright wooden shaft nearly a foot in diameter, through a mortise in the upper end of which is thrust one end of a long lever or "sweep," to the outer end of which is attached a horse. As the horse walks around in a circle, numerous long wooden pins driven into the central shaft pass closely between other pins that project from the inside of the box. The moistened clay is shoveled from the pit into the top of the mill, and in the form of a smooth, stiff paste it oozes from an opening at one side near the bottom, from whence it is grasped in double handfuls by the molder and thrust into wooden molds having six compartments the exact size and shape of a brick. Before filling the molds they are thrust into a box of dry sand which, the molds being moist, adheres sufficiently to give them a coating that allows the clay to slip out without sticking. After the molds are filled, a stick, which is kept in a little trough of water, is drawn across their upper surfaces, thus removing the surplus clay and leaving the brick smooth on top. To grasp double handfuls of the mud, "slap" it into the molds and scrape off the surplus, seems the simplest thing imaginable, yet it requires much practice and skill to mold 10,000 bricks in a day and do the work well. A green hand does not fill the molds perfectly, or else the clay is pressed in with such force that it sticks to the molds. The filled molds are rapidly carried away on wheelbarrows, dexterously inverted upon the hard, smooth yard that has previously been sprinkled with dry sand, and then carefully but quickly raised, leaving the bricks in long, straight rows. After two or three days' exposure, the bricks are turned upon edge, to allow the side that has been next the earth to dry. At this stage, before the bricks are thoroughly dry, some of them are put through a machine, in which they are pressed into a very smooth and perfect shape. One at a time they are placed upon a metal platform the size of a brick; a downward movement of a lever causes a metal box to rise and surround the brick, while a continued depression of the lever brings a metal plunger down with great force upon the enclosed brick. Raising the lever raises the plunger, depresses the box surrounding the brick, leaving it free for removal, and the machine in readiness for the next brick. Before the bricks are pressed they are gathered into long piles and covered with inverted troughs made of sheet iron. This covering retains the moisture, causing the bricks to "sweat," as it is termed, the actual fact being that the moisture becomes equally distributed throughout all of the parts of every brick, although when taken from the ground and piled up the upper sides were very dry and hard while the lower sides were quite soft and wet. Pressed bricks are used for facings for the corners of walls, or in any place where very perfect bricks are needed. A week's exposure to the summer sun, or even a less time in very hot and dry weather, leaves bricks sufficiently hard to be gathered up with wheelbarrows, and built up into a kiln for burning. In the lower part of the kiln archways are left extending through from one side of the kiln to the other, and the mouth of each arch is fitted with an iron frame, in which is hung an iron door. The bricks are not piled together in a compact manner, that is, interstices are left between them; thus it will be seen that when the outside of the kiln is plastered over with mud, making the walls nearly air-tight, and a fire is built in the arches, there is a draft that carries the heat and smoke up through the kiln. In fact, at night, blue-looking flames a foot in height may often be seen flickering up from between the bricks on top of the kiln. For at least a week there must be a constant fire, both day and night, in the arches, at the end of which time the kiln, with the exception of a few outside courses, will be a mass of red hot brick. Some of the arch bricks usually become so hot as to actually melt and run together into one solid mass, which is black instead of red when it

Fig. 3. MAKING PRESSED BRICK.

cools. About a week is needed for a kiln to cool off so that the bricks may be handled. [In the illustrations, on the preceding pages, Fig. 1 shows the feeding of the mill, Fig. 2 the sanding and filling of the molds, and Fig. 3 the making of pressed brick.]

TOBACCO CULTURE IN TENNESSEE.

MARION RAMBO.

The extensive cultivation of tobacco in Eastern Tennessee is of recent date, and yet this section has succeeded in establishing an excellent reputation for the production of fine grades. Tobacco grown in Green county, took the first premium at the New Orleans Exposition in 1885, and since that time the produce of this region has steadily held first rank.

The finest grades, of Tennessee tobacco are grown on light, sandy soil. Darker and richer soils make a dark and coarse grade of tobacco. Guano is used extensively as a fertilizer; it contributes to a good growth, and the light soil gives the desirable bright color to the leaf. The best soil for the production of tobacco is what is known as "huckleberry land." This is naturally a very weak soil, and unfit for any of the cereals, but it seems to contain, when in a fresh state, the very elements necessary for the production of the best qualities of tobacco. It is on new ground that the best results are obtained.

The wild land, which is covered with a growth of oak and chestnut, with an undergrowth of huckleberry brush, laurel, dogwood, sourwood and the mountain rhododendron, is cleared of its trees and brush. Care is taken to remove all the roots from the soil. When it is brought into a proper state of cultivation it will produce the best crop the first year. Two or three other crops may be had in succession from the same land, but after that it is practically worthless for all farming purposes. It is too poor to produce grass, with the exception of the native broom sedge and cinquefoil, both of which flourish in the poorest soil, and form excellent early spring pasturage. By leaving the land uncultivated, to grow up in this wild grass, in the course of a few years it might be so restored as to produce satisfactory crops of tobacco again.

It is the object of the tobacco grower to produce as bright a leaf as possible, with the finest fibers. He also endeavors to make a perfect leaf, one that is not broken or ragged. To this end it is necessary to give the growing plant the most constant care, to keep it free from insects, of which the most common and worst to be dreaded is the ordinary tobacco worm. No method has been devised for the destruction of this pest, other than that of picking them off by hand. It is necessary, therefore, to go through the tobacco field, to inspect each plant, as often as twice a week, from the time the leaves are six inches broad until they are full grown and ready to put in the barn. These worms when full grown are about two inches long, and one of them in growing to full size will devour almost an entire plant.

Three or four acres of tobacco is as much as one man can cultivate. It requires such close care from the time it is planted until it is put on the market that its cultivation is considered a great deal more difficult than that of ordinary crops.

The tobacco is fire-cured in air-tight barns. These barns are usually built sixteen feet square and twenty feet high. Tiers of joists are placed in this, about three feet apart, on which to hang the tobacco, when the leaves are fully matured. With a sharp knife, the tobacco stalks are split down through the middle nearly to the ground, and cut off below the lowest leaves. The stalks are then straddled across sticks three feet long, and when the sticks are full, hung on the joists in the barn. When the barn is full, heat is applied from the furnaces below, and the barnful of tobacco is "cured" bright and dry in about three days.

The curing of tobacco is a skillful art, and is successfully done only by experts. The heat is applied according to a scale of temperatures, which is varied according to the condition of the tobacco, so that only one who is skilled in the art can procure the best results. If a tyro undertakes to cure a barnful of tobacco, he is almost sure to spoil it entirely.

After the tobacco is cured and before it is ready for the market, it must be graded and "handed." Ordinarily from five to eight grades are made. Almost every leaf on a stalk is a different quality of tobacco. The color, texture and kind of fibers must determine the grade to which a leaf belongs. Each grade is separated and put into convenient bunches, called "hands," for expedition in handling. The marketability of the tobacco depends much upon the manner in which it has been graded. The tobacco, when ready for market, is not kept on the farm, but is stored in warehouses in the market towns, where on regular days it is auctioned off to buyers who come from the different wholesale and manufacturing houses throughout the country. The prices paid in the warehouses for the raw article range from eight to one hundred dollars per hundredweight. The latter price is paid only for the rarest quality of "wrappers." If the grower receives an average of twenty dollars he considers himself fortunate.

The preparation of the land, the cultivation of the crop, and the grading of the tobacco for market, furnishes employment for the entire year. February and March are spent in clearing the land and preparing the soil for the crop. Spring and summer are occupied in its planting, growth and cultivation. It is cured in August and September. It usually requires all winter to get it ready for market. Someone has said that it takes thirteen months to make and market a crop of tobacco. It certainly crowds the twelve months full of laborious toil.

LAYERING BLACK RASPBERRIES.

A. A. CROZIER, MICHIGAN.

Black raspberries, as is well known, are propagated by stolons formed at the ends of the canes or branches, which in autumn bend to the ground and take root. In the wild state the shoots, before taking root, become long and slender, and trail upon the ground until arrested by some obstruction, which holds them until they have time to form roots. The tips may penetrate a few inches into a crevice of the soil, or beneath any litter there may be upon the surface; but they usually come to rest directly on the true surface of the soil, into which the roots penetrate, the needed moisture being furnished by the covering of leaves or mold. Usually before taking root, the end of the shoot enlarges in diameter, and comes to bear only rudimentary leaves, assuming an appearance called ripeness. Frequently the tip branches just before taking root, so that each cane or shoot bears several young plants or stolons at the end.

Under cultivation, this natural method of propagation is necessarily somewhat modified. In the field and garden there is no friendly covering of leaves and mold upon the soil, so that if left to themselves few of the shoots find an opportunity to take root. Cultivated plants are also affected by winds to such an extent that, after the shoots have grown a few feet in length, many of them have their tips destroyed by being whipped about upon the ground or against other bushes, and are thereby rendered incapable of taking root. The fruit grower, therefore, who desires to propagate the black raspberry must furnish it some assistance. The usual directions are to bend the tip to the ground, and hold it in place by a clod, stone, or slight covering of earth. The time preferred for doing this is when the shoot has become long and slender, and its end swollen or "ripe." There is no necessity, however, for waiting so long. Many of the tips will by this time have become injured and unable to root at all; or if they do take root only inferior plants will result. Experience has shown that, if properly inserted in the soil, the tips will take root quite as well at an earlier stage, or as soon as they are long enough so that they can be bent to the ground. The end is buried in the earth, green leaves and all, and no harm results; in fact, these early-rooted plants are generally the best, as they have more time to grow before winter sets in.

The manner of inserting the tips in the soil is important. The tips will sometimes root well enough if merely covered by something to hold them in place, as already stated; but frequently, if no more is done, they continue to grow in length—especially if tipped in early, pushing out beyond the covering into the air again, so that they either do not root at all, or form poor plants. The best way is to use a spade, make an opening about three inches deep, insert the tip of the cane nearly vertically, and press the earth down firmly with the foot. Tips so treated stay in position, find suitable moisture for growth, and each forms one strong plant.

PROFIT AND LOSS ON THE FARM.

When a man uses an acre of hundred-dollar land for growing a ton of hay, worth on the farm only ten or twelve dollars, it is a confession that he has more land than he can properly utilize. The business of growing hay is all right, but the product should be at least two tons per acre, and can be made so by proper methods.

A tenant farmer on a large farm is not often a happy individual. The small tenant farmer, who rents a few acres on a cash basis, and cultivates it all mainly by the labor of his own hands, gets vastly more satisfaction from it than the extensive farmer.

THE SCHOOLHOUSE GROUNDS.

S. BARRINGTON.

The United States is noted for its excellent public school system. The care of the building and grounds, however, in country districts devolves upon the residents of the districts, and while most of the buildings are kept in fair order, there are many that need more attention. The grounds are usually from a quarter to half an acre in extent, and located without any particular regard to health, convenience, or a good outlook.

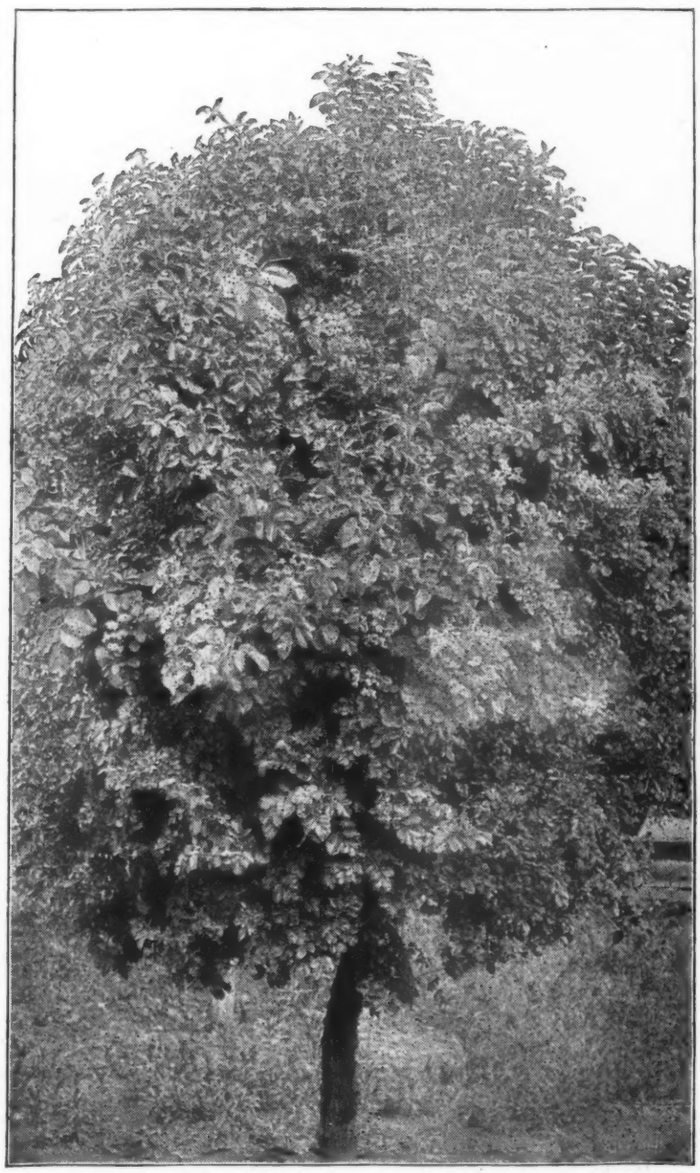
Not one school yard in fifty shows any ornamentation, except in the setting out of a few trees, and this has mostly been done since the creating of Arbor day. The press of the country has also worked up the American flag sentiment, and many districts have neat poles, and fling to the breeze, on nearly every pleasant school day, the emblem of freedom and unity. Aside from these, there is no outward show of ornamentation or improvement, but on the contrary, many teachers, to retain the good will of the scholars, allow them to build playhouses, make excavations for various purposes, and have a romping time generally on every part of the yard. Between terms these emblems of childish pastimes remain as at the close of the term. How much better, more instructive and ennobling if the summer teacher had aided the scholars to prepare a neat flowerbed, setting out some hardy annuals, with a good sprinkling of pansies. With the latter, flowers could he had almost as soon as snow leaves the ground, and, later, fresh bouquets, nearly every day, for the schoolroom. This would also give an opportunity for practical lessons in botany, and the care and management of plants. Most teachers would do this if they knew that the people of the district would take good care of what was planted. The fences should be in good order. Live stock should be kept from the highway, unless the ground be fenced in and mowed at the proper season. There are many teachers who would undertake this out-of-door movement. The trustee is a leader during his term of office, and when the teacher is engaged, these matters should be mentioned. One great trouble is that parents pay too little attention to their children while at school, giving them not half the care they do the colt or steer in the adjoining field. They visit the pasture many times during the season, while term after term of school goes on, and they never cross the threshold of the schoolhouse door. If they are fortunate in securing a good teacher, all is well. If the reverse is the case, it is ill, and the children are the sufferers.

Feeding for Milk.—Cows that have been in full milk all summer, will need extra feeding, plenty of pure water and warm shelter to keep up a profitable flow of milk during the winter months, and it will pay well to use proper care and diligence in this matter.

AN ELDER TREE OF ARIZONA.

N. GENTRY, ARIZONA.

The illustration of a "Giant elderberry tree" in Florida, published in a former number of the AMERICAN AGRICULTURIST, reminded me of the fact that I possessed a negative taken of a tree growing on the Gila river, in Graham Co., Arizona, which is of the elder genus, and so far as I know cannot be duplicated from any other portion of the American continent. It has many characteristics of the elder. Although I had no opportunity for actual comparison, I should say from recollection that the leaves are the same as those growing on the bushes I used to cut to make popguns, when a boy, in the State of Kentucky. The flowers are also similar in appearance, though smaller, more numerous, and much more delicate. The elder as commonly known in the Eastern and Middle States is a straggling bush, bearing white flowers, usually in large, compound cymes, or large, flattened clusters on the ends of the shoots or twigs. The stems are jointed and filled with pith between the joints. The trunk of the one shown in the illustration is covered with bumps or enlargements that might indicate these joints to have existed at an earlier stage of its growth, but are not now distinctly traceable. A tree of more graceful shape, or more beautiful or denser foliage, is seldom seen than this elder of the Gila valley. It is said by old residents of the valley to be a production of, or indigenous to the Graham mountains, which overlook the valley from the Southeast. The common elder is one of the first to feel the approach of winter, and drops its leaves very early in the fall. The elder tree shown in the accompanying illustration has some points of excellence not possessed by the Florida species, as it does not branch at the root and has a compact, beautifully-shaped head. It is an evergreen, and if it would retain this characteristic in more northerly climes, its introduction would insure its kind reception among the most favored of small ornamental trees. It is more compact than the holly, and its leaves are soft to the touch, without the disagreeable, sharp points of the holly or the pine. Being free of wax or spines, it would make an excellent addition to Christmas greens.



AN ARIZONA ELDER TREE.

[The elderberry tree described and engraved after Mr. Gentry's photograph, is doubtless *Sambucus glauca*, Nutt., an arborescent species more or less common in California, Arizona, and southward in Mexico. It often attains a height of fifteen to twenty feet, with a stem a foot in diameter. It is closely allied to the Black elder (*S. nigra*), of Europe and North Africa, and is not easy to distinguish from it except when in fruit, that of the American species or *S. glauca* being so densely covered with bloom that it appears to be white, although the skin is really black under the bloom. The European elder is almost an evergreen; that is, the growth of the bright green foliage is continuous in warm climates.]

A HOMEMADE FRUIT EVAPORATOR.

L. D. SNOOK, NEW YORK.

The process of evaporation is the cheapest known method of preserving indefinitely, for future use or for market, such fruit as raspberries, blackberries, cherries, apricots, plums, or apples; and in season of plenty, it enables one to preserve in a condensed and readily available form, fruit that would otherwise be sold at a low price, or allowed to decay. Some excellent forms of evaporators are upon the market, and may be obtained ready to set up for immediate use. However, when several acres of berries are to be evaporated, or fruit is evaporated for other parties, it is best to put up a building especially for the purpose, and to a person skillful with tools the expense need not be great. A convenient and cheap form of evaporator is shown in perfection in Fig. 1. This will evaporate one hundred bushels of raspberries every twenty-four hours. The building is eight feet wide and twenty-two feet long. The sides and roof may be simply boarded up and down, or finished as elaborately as desired.

If possible, locate the fruit-drying house upon a sidehill, and at one end of the building lay up a cellar wall nearly five feet high, the width of the building, and about four feet wide, inside diameter. At one end a space is left for a door. Within three inches of the top of the foundation wall a stovepipe is inserted. In the same wall sections of five-inch pipe, *a*, are inserted to admit fresh air to the furnace room, and if the air is discharged near the center of the cellar, or immediately over the stove, so much the better, as it creates a better draft than when admitted along the sides. In constructing an evaporator, a novice nearly always makes the mistake of allowing too little ventilation about the furnace. If a proper amount of fresh air is not admitted the fruit is simply steamed and often ruined by the cooking. Always admit the fresh air from as near the ground as possible. The ventilators should be of ample dimensions, and if made with a forced draft, better and quicker results will be obtained. When the work is rushing, all these little things are very important. Small fruit is best evaporated on the same day it is gathered. Hence, when doing a commercial business, aim to have the fruit delivered only as fast as the capacity of the evaporator will admit. For a building of this size a common box cast-iron stove, one foot square and two and a half feet long will, with dry wood for fuel, furnish all the heat necessary, but it requires almost constant attention, and the heat will not be uniform. Hence, if possible, put in one of the low-down, anthracite coal, base burners. The legs may be removed; the object being to have the stove as far below the fruit shelves as possible. One ton of hard coal will evaporate a sufficient quantity to make at least a ton of dried raspberries, and if the wood has to be purchased, coal will often be the least expensive. To utilize all the heat possible, let the pipe cross and recross the furnace room several times.

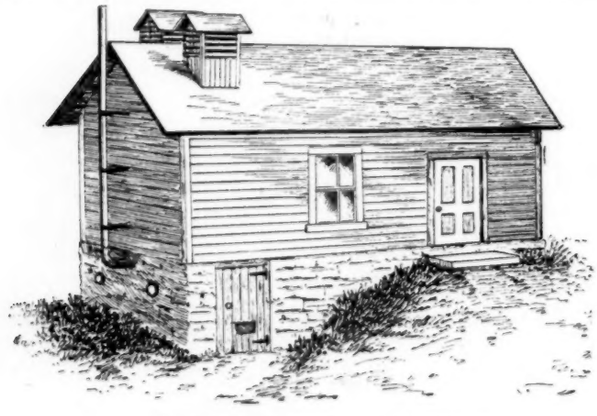


FIG. 1. EXTERIOR VIEW OF EVAPORATOR.

An interior view of the evaporator is given in Fig. 2. The evaporator chutes are built directly over the furnace room, and should be of a size corresponding to the size of sieves or trays, the largest size of which is four feet square. When these are uniformly covered with a bushel of berries each, it requires a considerable strength to handle them quickly, as the little drop doors should not remain open longer than is absolutely necessary, or too much heat will escape. The drop doors, *n*, are five inches wide, and each space will admit two sieves. The strip to which the doors are hinged being one and a half inches wide. These dimensions can be changed to suit the fancy. For instance, a door may cover the space for three or four sieves, and be retained by a catch instead of wooden button. Two chutes are shown in the sketch. Often three are erected side by side; the dimension of the sizes should be determined upon before the building is commenced. The wire for a four-foot square sieve, of the best galvanized material, costs about seventy-five cents. It comes in rolls of different widths. Where women are to handle the sieves, those three by four feet in size will prove most convenient, hence make three rows of chutes three feet wide and four feet long. A long box about one foot deep will prove convenient to throw the evaporated fruit into direct from the sieves, from which it is readily shoveled into bags, boxes, or other receptacles. This room should be well lighted, and racks may be placed along the walls for holding picking trays, baskets and other things when not in use.

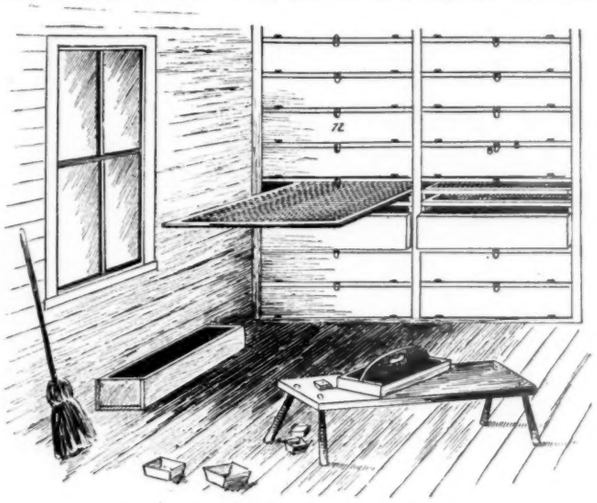


FIG. 2. INTERIOR VIEW OF EVAPORATOR.

In the greatest evaporated-raspberry-producing section of New York State, hand-picking costs two cents per quart, requiring, on an average, nearly three quarts of fresh for a pound of dried fruit. Raspberry plants, if properly attended, will yield five paying crops before being removed. A yield of six hundred pounds per acre is about the average crop. An active picker easily gathers one hundred quarts per day. By the use of an improved harvester one man will gather twelve bushels per day, and, by active work, several bushels more. Machine-picked berries of course contain leaves, broken branches, and other litter, but are dried in this condition, then run through a fanning mill, which removes all the coarse and light rubbish, when women and children will look them over at their own home, at the rate of fifty cents per hundred pounds. This latter method of harvesting is one-half cheaper than hand-picking, and is becoming more popular each year. In the busiest season, put in the fresh berries at the top, moving down a point or two every hour, taking out the properly dried ones at the bottom; they should be dried just so much that in grasping a handful with considerable pressure they will fall apart when laid upon a level surface. If too dry they will again absorb moisture from the variable atmosphere. If allowed to become too dry, they are liable to damage from scorching, especially those on the lower tray.

FARM AND GARDEN EXPERIENCES.

DR. GEORGE G. GROFF, PENNSYLVANIA.

Stowell's Evergreen corn, planted July 1st, on a plot from which a crop of hay had been taken, gave a heavy yield of both ears and fodder. Livingston corn, planted July 7th, on a plot from which wheat had been harvested, matured fodder and gave a heavy yield of soft corn, valuable for feeding. The season was very dry after planting, but where the land had been heavily fertilized the yield was large, and the effect of the drouth but small.

For six years three crops have been taken each season from my young orchards, and yet the trees have made an excellent growth each year. The rotation has been: First, early potatoes; second, sweet corn, planted between the potato rows about June 15th, before the potatoes have matured; third, turnips, sown all over the ground about August 1st. All three of these crops fully mature, no one interferes with the other, nor any one of them with the trees.

The rotation has been varied to potatoes, cabbage, turnips; also potatoes, corn, celery; but the first mentioned is the usual rotation.

Wheat and rye, sown on corn stubble and worked in with the cultivator without plowing, do just as well as when the plow is used. When sown late, such grain is greatly protected by a top-dressing of manure.

When clover seed has not been sown until the ground has become hard and dry late in the spring, a spike harrow run over the field will prepare a seedbed and in no wise injure the wheat.

Woodlands, where the trees are not too thick, may be seeded to grass without plowing. Cut out all the underbrush, then run a sharp spike harrow over the ground thoroughly, to form a seedbed; lastly, sow the grass seed. Late fall or early spring may be the time.

WISTARIAS.

P. J. BERCKMANS, GEORGIA.

Among the many early spring blooming climbers no class of plants is as ornamental as the Wistarias, and where ample space can be given the profusion of their flowers is unsurpassed by any

A GARLAND OF BEAUTIFUL WISTARIAS.

other plant. There are numerous varieties in cultivation; the Chinese Purple is doubtless the most popular one of the genus. Others, however, are equally attractive. Of the *Wistaria Sinensis* group the following are the most valuable.

W. Sinensis purpurea.—Racemes light purple, produced in the greatest profusion in early spring. If the branches are cut back a month after the spring blooming is passed, a second crop of flowers is produced, and at the South a few flowers can be had by repeating the shortening in of the branches during the summer.

W. Sinensis alba.—With pure white flowers in long racemes. There are two forms of this, the difference consisting only in the individual flowers of one form being a little larger than the other; this is doubtless the variety introduced from Japan about 1870, and classed by European botanists under the name of *Wistaria Japonica macrobotrys.*

W. Sinensis flore pleno.—Flowers very double, of a dark purple tint, racemes long. A most beautiful variety, but unfortunately not a profuse bloomer. The late Francis Parkman kindly presented me with a plant in 1873, and while the growth is vigorous this has produced flowers only four years. This spring it bloomed profusely.

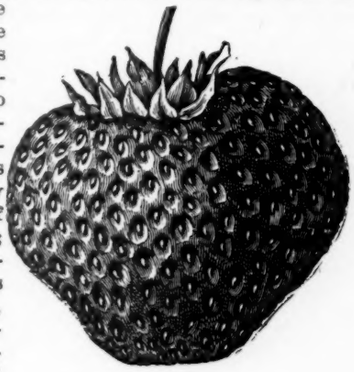
Wistaria multijuga.—A Japanese variety, with flowers of pale lilac and purple wings. The flowers are scattered upon a raceme of great length, some of the latter being thirty inches long. It is also not a very profuse bloomer, but flowers are produced during a month to six weeks.

Wistaria brachybotrys.—Flowers violet purple, with yellowish center, clusters short, profuse. This species blooms immediately after the Chinese varieties, and lasts three weeks. It is thus useful for a certain time when others are not in flower.

Wistaria frutescens magnifica.—An improved form of the native species. Flowers fragrant, in short and dense flowered racemes, light lilac, lasting a long time and produced in more or less quantity throughout the summer. The flowers appear upon the new growth. A white flowering form is also cultivated. [The lower racemes in our engraving represent *Wistaria Sinensis purpurea*, the middle racemes *W. S. alba*, and the upper ones *W. S. flore pleno.*]

THE TIMBRELL STRAWBERRY.

But few newly-introduced fruits have received so favorable encomiums from expert judges and professional fruit growers as have been showered upon the Timbrell strawberry, the original stock of which is owned by E. W. Reid, Bridgeport, Ohio. All those who have seen and tried it pronounce it a variety of unexceptional merit. The flowers are pistillate; berries very large, uniformly conical, of beautiful crimson color; firm, and of excellent quality; season very late. Its foliage is strong and healthy, and the plants are wonderfully productive. For quality, healthiness, vigor, and large average size combined, the introducer claims that there is no other variety to equal it.



THE TIMBRELL.

PREPARING PLUMS FOR MARKET.

In most cases experience has proven that plums, if shipped to market in ten-pound grape baskets, provided with handles, and put up in neat, presentable shape, will bring the producer a greater per cent. of profit than if shipped in half-bushel, or bushel crates, or packages. A careful picker can fill the basket direct from the tree; but the usual plan is to pick into large receptacles, then, carefully sorting the plums, to place them in packages ready for market. This frequent handling removes a great deal of the bloom from the fruit, which removal should be avoided as much as possible. By the use of a single table, similar to the one shown in the engraving, from a sketch by L. S. Yates, plums and other similar fruits are easily sorted. The top of the table should not be over three feet long and two and one-half feet wide. The sides and back, *r*, *r*, *r*, may be eight inches wide at the back, tapering to three inches in front; the front guards, *c c*, should be less than three inches high, leaving a six-inch space between the inner ends; the slanting board, *g*, is six inches wide. To operate it, place the fruit carefully upon the table, the sorter occupying a chair in front of the table, with a basket on his lap. Both hands can then be used in removing the leaves, limbs, damaged or imperfect fruit, throwing the refuse into baskets, *m*, *m*, located upon the floor, at a convenient point upon each side. The perfect fruit, or that intended for shipping, is rolled in front, and passes over the incline, *g*, into the basket. This table need cost but little, and may be made in as crude or elaborate a form as wished. In working, the elbows can rest upon the guards, *c c*, which will make the operation much easier. An ordinary table can be fitted with these simple appliances, and quickly removed after the shipping season is passed.

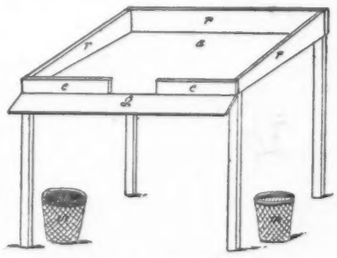


TABLE FOR ASSORTING PLUMS.

Perennial Phlox.—No herbaceous plant can excel the perennial phlox in its rich show of great masses of solid color, nothing equals it in this respect. Clumps three and four years old, form a bunch as many feet across, containing scores, if not hundreds, of stalks, each one bearing a great head of flowers. The shades of red and

rose are very rich and delicate. A few plants of the white varieties should be used to furnish contrast. To grow this flower well, the ground must be made rich in spring, and kept free from grass and weeds. Not infrequently we notice that some horticultural writers advise staking the plants. Do not do so. If you do, you make them look so stiff and prim that you spoil them. It is not at all necessary to give them support, as the stalks are strong, and quite able to take care of themselves. Those on the outside will be crowded by those in the center, and quite naturally bend downward when in bloom, but they will not break, and they give the plant a charming effect, making it appear a rounded mass of color from the ground, an effect impossible to obtain when stakes and strings are used. The great value of this flower for planting amid groups of shrubbery, and especially among evergreens, is just beginning to be understood. It is to the herbaceous garden what the geranium is to the window garden and greenhouse.

JULY IN THE FLOWER GARDEN.

EBEN E. REXFORD.

To have good flowers after the hot, dry days of midsummer come, a mulch of some kind must be used. I find nothing better than grass clippings from the lawn. They are not noticeable when spread about the plants, and if dug in about the roots from time to time, they afford a good deal of nutriment, which the plants will appreciate. It is better to keep the ground moist at all times than it is to allow it to get dry and then apply water. In doing this, extremes are avoided, which are almost always harmful to the plants. If you have no lawn from which to obtain clippings, the the stable litter, or even hay, may be used with fairly good results.

It is of little use to try to grow good specimens of the caladium or dahlia at the North, in summer, without applying a good deal of water, and using considerable liquid manure of some kind. In the ordinary dry spell, which comes during July and August, these plants are sure to suffer such a check that they seldom recover during the more favorable weather of the succeeding months, unless care is taken to see that their roots are kept moist at all times. They are both great eaters and hard drinkers. As usually grown—perhaps neglected would be the more appropriate term to use—they are unsatisfactory, but when properly cared for they are good plants, and deserve a place in every garden. The caladium is only second in tropical effect to the ricinus, and the dahlia stands in the front rank of autumn bloomers when properly grown.

Do not expect much from the pansies during the hot months. It is a good plan to keep all buds picked off the plants until September. You can get along without these flowers now, for there will be enough of other kinds. Let them hold themselves in reserve for fall work. If this is done, you will be surprised at the size and richness of their flowers as soon as cool weather sets in. Plants allowed to blossom throughout the summer will be sure to give inferior bloom, because their strength has been wasted in attempting to do good work with the chances of success all against them.

I am not sure but the canna is becoming a formidable rival of the gladiolus as a flowering plant. It has one thing that the gladiolus lacks to commend it to the gardener who likes to have his beds show a good mass of green as a suitable background for flowers—and that is, plenty of beautiful foliage. To get satisfactory effects from the gladiolus, it is necessary to grow the plants in masses, so that there will be enough flowers to fill the beds. In using the canna, the foliage will be taken into consideration quite as much as the flowers, and the combination of the two will give better results than either considered singly. Some of the new cannas have flowers of extremely rich and brilliant coloring, and they seem to be steadily improving in size. Madame Crozy has spikes of bloom that fairly rival any of the scarlet gladioluses. One great point of merit in favor of the new cannas is the tendency to bloom throughout the season. As soon as one stalk completes its flowering, another is sent up, and often there will be several stalks in bloom at the same time, on strong roots.

While tea roses will give some good flowers during the summer, if properly cut back from time to time, and thoroughly mulched, they will wait for cooler weather before attempting to do their best. The hot weather robs the blossoms of vitality. As soon as the days grow cool, the flowers will increase in size as well as quantity, and their texture is greatly improved by the change. Many varieties will make a growth of such luxuriance, after September sets in, that one is warranted in cutting away almost all of the old plant as soon as this vigorous fall growth begins.

THE SHEEP GADFLY.

HERBERT W. MUMFORD.

The sheep gadfly (*Œstrus ovis*), the parent of "grub in the head," is quite small and is very difficult to catch when it is flying about among the sheep. The presence of this fly may be suspected when the sheep and lambs are seen to huddle together, thrust their noses into the earth, or beneath each other, and stamp about with their fore feet, now and again running a few yards as if to escape.

These flies are ever on the alert to secure an opportunity to deposit larvæ in the sheep's nostrils. There are, at least, two erroneous opinions which have become quite firmly established in the minds of farmers. One is, that the fly deposits eggs in the nostrils, but, as noticed above, the gadfly is viviparous, giving birth to its young alive, in this instance as larvæ. The other false idea is that the larvæ, after ascending the nostril, attack the brain itself. When the larvæ obtain a lodgment in the rim of the nostril, they gradually work their way upward into the head. They are usually found to be present in greatest numbers in the frontal sinuses.

Knowing how sensitive the nasal passages are, and the pain caused by the presence of any foreign substance, one can readily imagine the misery the sheep is caused by the presence of from one to a dozen of these grubs, each of which is armed with a pair of hooks for the purpose of attaching itself to the membranes of the passages, and numerous spines to aid them in their movements. It appears, from the rudimentary mouth, that this fly only lives as a fly to reproduce its kind, as it cannot even eat.

I have known farmers to loose a sheep, and, upon examination, finding perhaps one grub, they at once attribute the cause of death to grub in the head, while the truth is that it is only when a number are present that this pest produces such fatal results. When a sheep is seriously affected with grub in the head, there is usually more or less discharge from the nostrils, frequently a violent sneezing and snorting, accompanied by the expulsion of mucus, and sometimes of the grub. As the malady gradually advances, this sneezing becomes more violent, the sheep throwing its head far back in the act. Death has been known to occur in from six to eight days after the first symptoms appear, yet such cases are rare. From my observation, I conclude that the season for appearance of the fly is from the latter part of June to the middle of August.

The one encouraging feature in the treatment of nearly all of the ailments of domestic animals is that the previous care and management of stock has much to do with their state of health at any time; that it is within the power of the shepherd to regulate diet, exercise and ventilation; that by proper preventive measures serious subsequent attacks may usually be avoided. All medicinal and surgical treatment is far from practical on the farm, and the only safety in dealing with the enemy of the sheep, lies in taking every possible precaution to prevent the larvæ from being deposited in the nostril. There are three natural and simple preventives which are helpful: Plenty of dust for the sheep to lie and stamp in; tall grass to graze in, which has a tendency to brush off and frighten away the fly; and dark, cool sheds, where the sheep can be folded during the heat of the day and again liberated after sunset.

A FLOCK OF SHROPSHIRE SHEEP.

EMMA A. HURLBUT.

At "The Locusts," a farm in Northern Pennsylvania, there are fertile flats near the river, on the next rise of ground are the meadows, and then begin the steep hillsides which are the sheep pastures. To a casual observer the stones appear to occupy the greater part of the land. These hills never attain the luxurious verdure of the meadows, and in the spring they are of a gray-green color. At intervals are left single, tall, straight hickory trees, which afford shade for the panting sheep in the sultry days. Although the hillsides yield but a grudging growth and stain themselves but faintly with the prevailing color, yet the sandy loam which composes the soil produces material for bone and muscle which make strong and healthy sheep.

A few years ago the character of the flock kept here was very different, being the wrinkled Merino. With low prices for wool it seemed desirable to have a sheep that would produce more mutton, and so the Shropshires came. Primus, the first arrival, came from the famous Crosby farm in Michigan, and was soon joined by two others, Nellie and Fannie, from Ohio. When seven months old, Primus was a sheep not to be despised; his back was broad and flat, his fleece heavy and white and his eyes mild, but there was a sort of bulldog broadening of the face that showed determination.

Nellie and Fannie were finely-built sheep, with polished, slender black legs, and intelligent, jet-black faces. Thus the flock was started, and when Billy was added later, they formed an aristocracy to which no wrinkled Merino was admitted.

The Shropshires make fine mothers for their almost certain twins, and often triplets. They are loving and careful, and almost fierce at the approach of danger, but so intelligent and gentle that they recognize a friend at once, and their lambs crowd around the shepherd fearlessly. Indeed, I have heard it remarked that it is a disadvantage to have sheep so tame, as it is almost impossible to drive them. Sheep can stay in one pasture only a short time, as they soon eat the grasses very closely, and must then be moved to another. The drove of about three hundred sheep is in four flocks. When scattered about upon the hillsides, beneath the shade of the hickories or in the full sunshine, they form a subject Rosa Bonheur might have sought. When the weather is warm enough so they can stay out at night, they require very little care until November. When sudden snow storms overtake them in the fields, and their yards are not ready for them, there is a hurrying of preparation, and, finally, through the deepening snow they come, struggling and panting. If a sheep is tired and discouraged, and lies down or pauses, one of the helpers pushes it gently up and urges it slowly on till, finally, all are in the sheltered yard, and the routine of the winter begins. It takes time and thought to arrange for a succession of flocks at the drinking trough, at the feeding rack, and at some of the troughs for oats and bran.

The mows of the barns are stored full of clover hay, which the sheep like best and best thrive on. This is helped out by other hay and straw, and, as spring opens, they are given turnips with their other food as the lambs begin to come. Soon the barnyard is full of young life, and baby bleats are answered by the tone of the mother's voice. The shepherd is busy now with the care of the newcomers. The path from the yards to the house kitchen is worn deeper by his steps, as he goes back and forth, bringing a basket in which are two, three, or four chilled lambs, to be warmed to life by the kitchen fire. The wicker-covered bottle is also brought into requisition, and, in a few hours, if they survive, they are vigorous again and he carries them back, to come in bringing more lambs in his arms. Perhaps he sits up until midnight with a chilled lamb, only to see it die.

The Shropshires are sensitive to heat and must be sheared earlier than Merinos. The first warm days in May send them panting to the shade, and word goes round that they are to be washed. Arrayed in old clothes or in a raftsman's suit of rubber, the shepherd and his helpers drive the sheep down to the river bank. There is a pen prepared for the occasion, with an open front toward the river. They catch a scared sheep, step down into the water, and squeeze the wool until it looks clean; then the sheep is released into the sunshiny road, where, heavy with the weight of water, and bewildered by its late bathing experience, it makes its way slowly back to the pasture. They are a sad procession, all day long, evidently not believing in immersion.

The annual shearing is the great time of the year. Three or four men, who make this a spring vocation, are sought for over the country, and appoint a day to begin. Then the farmer's wife lays in a huge stock of provisions in expectation of enormous appetites. The shearers kneel on the floor and hold a sheep firmly in place while they slowly remove the fleece. There used to be men who could shear seventy sheep in a day, but forty sheep is now considered a large day's work. The fleece rolls off in rich, creamy folds, which look like summer clouds, and is folded up in a box made for the purpose, and tied in a square, compact package. The day is warm, and the perspiration rolls off the shearer as the fleece rolls off the sheep. One after another they are released, white and angular, and strange to themselves; as they reach the barn door it is the custom for the shearers to utter a sharp yell, which sends the sheep into the barnyard with a wild leap.

One day a buyer appears, and after proper parley and explanation of tariff effects, he offers a price which the farmer accepts. Great wool sacks are sent and hung in the barn; the fleeces are tossed in, and some boy is hoisted up to trample therein. Then they are hauled to the station, and one of those infrequent occurrences on the farm, a check to be endorsed, is the outcome. Year by year the flock changes. Yet the shepherd loves it and the individuals in it. The lambs, which come in March and April, grow very rapidly while with their mothers. Finally they are removed to the most flush of clover pastures on the flats, but not even such tempting food can win the lamb's heart away from its mother. For days a chorus of ewes' voices answers the pitiful cry of the lambs. But, like all young things, they soon forget, and gambol as of old. They feed on the rank clover, which is nearly as high as their backs, and enjoy life thoroughly. They are fed meal or wheat bran beside, and, in October, they are a fine flock, averaging a weight of sixty pounds, and the drover buys them for the city market. The last we see of them they are crowded into a double-decked car on a freight train, and one word, "lamb-chops," tells the rest.

THE FLOCK OF SHROPSHIRE SHEEP AT "THE LOCUSTS."

Reform for Babies.

ALICE CHITTENDEN.

We are reforming everything—particularly politics and women's dress. Sometimes we run riot in the matter of reform. It generally happens, however, that if we give them time enough the reformers themselves begin to reform, and then things go smoothly for awhile. But we really need a little reform for babies as badly as we do for politics. It is a reform, however, that the small victims are powerless to institute, and, consequently, it must be begun by the mothers.

A matter in which reform is a crying need is the kissing of babies on the mouth, or anywhere close enough to the mouth for the child to get the breath of the person who does the kissing. Grown people seem to be devoid of common sense on this subject. With stomach or throat trouble, with teeth more or less imperfect, they will still insist upon kissing a baby's pure lips, thus often carrying contagion, sickness and death. I am of the opinion that, in any case, kissing, except on the cheek, is an unwholesome practice. It is especially and certainly so between infancy and mature age. It is sometimes a little awkward for a mother to tell an ardent friend to kiss her babe only on the cheek, but it should be done at any risk. As soon as the child is old enough, teach it to always turn the cheek. A baby of ten months can learn this lesson. Even if you are quite sure of your own state of health, it will be well to help along the lesson by always showering your caresses anywhere but upon baby's mouth. You can be just as loving. You can kiss the pretty pink, dimpled hands, the fat, white shoulders, and the crown of the curly head. Let baby practice on you all he pleases, turning your cheek or forehead to him. There will be no need to smother his affection because you are hygienic.

The bands with which too many babies are swathed are another subject for reform. An elastic, knitted band, looking very much like a wristlet, only larger, is all that is necessary from birth. It is slipped on over the feet, there are supporters passing over the shoulders, and a strap to fasten it with button or safety pin to the diaper. Over this should come a flannel slip, with sleeves for winter, without for summer. The white petticoat, too, if this must be worn, should be supported from the shoulders, and over all the slip or dress. Such an outfit need not weigh more than a pound. There is no comparison between the comfort of a baby thus hygienically dressed and one with inelastic bands tightly pinned about his waist, two or three petticoat bands likewise tightly pinned, and both these and the dresses of unnecessary length and correspondingly heavy, and all to be supported by pressure around the little waist.

Baby's bed, too, is an important matter. It should be a fairly hard hair mattress, without pillow. On laying him down at night, if the mother or nurse would carefully smooth the little ears back, we would have fewer people going around with their ears standing at right angles to their heads. It may seem superfluous to say that baby should have regular hours for eating and sleeping, but too many babies are allowed to eat "whenever they are hungry," which generally means whenever they are fretful. There is much more danger of overfeeding than of underfeeding a baby. Every two hours is often enough for the first three months—after that every three hours. In a great majority of cases it is perfectly possible for every mother to make her baby wholesome, happy and obedient. It may seem strange to speak of an obedient baby, but at six months a baby can be taught quite well to obey, or it can be spoiled and allowed to have its own way, and make itself and every one about it miserable.

A catechism for people about to marry, one by which they could learn each other's ideas respecting the government of children, the management of a house, and such other states and conditions in life as they are probably to be called to, would prevent many divorces. "Are you not very proud and fond of your little daughter?" I asked a young father lately. To my surprise he replied: "She is so naughty and self-willed that no one has any comfort with her." This tyrant was ten months old. As I knew its father to have strong ideas regarding the bringing up of children, I guessed at the weakness of the mother. "Be good and you will be happy," is a copy book maxim that for parents should read, "Teach baby to be good, and both you and he will be happy."

When You Go Shopping.

PALMETTA MONTCLAIR.

Did you never return from a shopping expedition with a feeling of complete failure forced upon you because you had forgotten the most essential thing or things on your list, and this, too, in spite of the fact that you had a list? For the woman who lives uptown or around the corner, this may not be so serious a matter, but to the suburban resident, especially if she be one who dislikes shopping, it becomes almost tragical.

To do a successful day's shopping, a certain amount of preparation is necessary. However little you may care for dress in the abstract, if you are about to purchase a gown, a cloak, or a hat, ordinary wisdom will suggest that you inform yourself somewhat as to the fashion of the day. By a study of such circulars as the large drygoods stores now send upon application, you can also learn about what you ought to pay for it. In making out your list, put all the articles to be purchased at the same store, or kind of store, under each other. Do not write "thread, stove polish, china, lace, tins," and so on, but classify your requirements. Then, too, although the early bird is popularly supposed to catch the worm, it is well to know that it is possible to be too early a shopper. If you go into a store much before nine in the morning, you will often receive scant attention and courtesy, as the goods are not properly disposed, and the full complement of clerks have sometimes not arrived. Therefore, if you arrange to make such purchases as can be made in the least crowded stores between the hours of nine and twelve, and then, fortifying yourself with a cup of hot chocolate or bouillon, go to the great bazars between twelve and two, when more leisurely shoppers are lunching, you can do great execution.

So much for your purchases, unless I add the caution which a wise woman once gave me, to always buy the largest item first, in order not to fritter away your money on small purchases to such an extent that when it comes to the biggest and most important article, you have none left. Now, unless you would arrive at home a complete wreck, give yourself a moment's consideration. Don't lunch, after waiting until the middle of the afternoon, on a glass of ice-cream soda and a Charlotte Russe, but, in cold weather, take a hot soup and bread, or a bit of rare steak, and in warm weather good sandwiches or cold meat and bread, with a glass of hot milk, than which latter there is nothing more refreshing to tired humanity. Then go to the parlor of some large store and further refresh yourself by washing your hands and face and doing up your hair tidily. Pin on your bonnet securely, smooth out the wrinkles of your veil, and don a pair of fresh, not necessarily new, gloves, for, if you are truly wise, you will use a well mended and old pair of gloves for shopping. Attention to these trifling details will send you home rested in body and at ease in your mind, with the consciousness of a good day's work well done, and the crowning satisfaction of feeling that your bonnet is not awry, and that you are not to be readily picked out as a tired shopper.

Money-Making for Girls.

VELMA CALDWELL MELVILLE.

Do you know, girls, that raising flower seed for market can be made a very paying business, if one puts sufficient work and care into it? We all enjoy floriculture, but would we not enjoy it much more if we had hope of pecuniary reward? In almost every part of our land there are fairs held where the best in the line of floriculture receives liberal premium; first of all set aside some choice plants and "train" them for competition; then—well, for instance—raise sweet pea, pansy, aster and phlox seed for the home market. Go to whoever deals in flower seed in your town or community, tell him what you are doing, and ask him to give your seed a trial. "Mighty ends from small beginnings," you know. Improve your strains year after year; add to your varieties, put only good seed on the market, advertise in your local paper, and, by and by, you will have built for yourself a business, and have been earning something all the time. I have been much interested in the success of a few men whose sweet pea enterprises have become public. One gentleman raised three tons of the seed last year, and sold it at a good profit. The fame of a ministerial sweet pea garden in Massachusetts has spread all over the world. It is said that a seed house in Germany—the largest in the world—has lately bought seed of this same gentleman, who undertook the culture of this, his favorite flower, with no thought of monetary reward, but for outdoor exercise. He gives all his profits to the cause of missions. Now it has always seemed to us that floriculture is preëminently *woman's* work; and I recommend it to girls as a source of profit as well as pleasure.

Second Best.

LUCY ELLIOT KEELER.

At the initiation of the young Marcus Aurelius as a priest of Mars, the crowns flung by the other priests fell here and there about the recumbent statue; but the crown which the eight-year-old Marcus threw lit and rested on the war-god's head. Nearly eighteen hundred years after, in a speech to some schoolboys, Gladstone told them "If a boy ran he ought always to run as fast as he could; if he jumped he ought always to jump as far as he could." Thus, separated by centuries, two of the greatest statesmen who ever lived expressed the keynote of their successes; to use one's gifts, be they great or small, to the uttermost; to leave nothing to chance; and to rest content only with perfection.

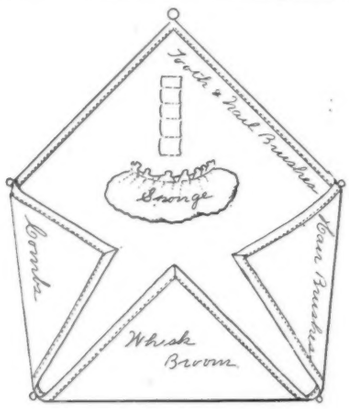
The boy or girl who would read, see or know the best that the world contains, must always be warned against the second best. Nothing short of absolute evil is so fatal. Washington's greatness unquestionably began in his physical superiority. He could leap, throw the bar, run and ride better than any of his youthful companions. Dickens never undertook a thing, whether for pleasure or business, without making it for the time the object of his life. Among eighty or ninety staff reporters he held the very highest place, not only for accuracy in reporting but for his marvelous quickness in transcribing. "If I set out to find an Indian arrowhead," said Thoreau, "trust me to find a fine one;" and the same man, by his mere manner of throwing open a car window, was offered, by a manufacturer who observed him, a situation on the spot. Mrs. Clive was one night standing at the wing of the theater alternately weeping and laughing at Garrick's acting: "He could act a gridiron if he chose," she exclaimed, turning away in admiration; and John Gough expressed the same determination and the same secret of power when he said, "Whether I speak to one or to thousands in my audience, I try to do my best."

Byron said that whatever Sheridan chose to do had always been the best of its kind. "He has written the best comedy, the best drama, the best farce, the best address, and to crown all, delivered the best oration ever heard in England." Another example of his determination was revealed in the man's courtship. He first met his future wife at a party. Years of dissipation had sadly disfigured his once handsome features. "What a fright!" exclaimed Miss Ogle, loud enough for him to hear. Instead of being annoyed by the remark, he at once engaged her in conversation, put forth all his powers of fascination, and resolved to make her not only reverse her opinion, but to fall in love with him. At their second meeting, she thought him ugly but extremely fascinating, and a week or two afterward declared that she could not live without him. Another Sheridan, our own American general, in an address to the West Point graduates, not long before his death, begged them "No matter if you are hidden in an obscure post, never to content yourselves with doing your second best, however unimportant the occasion." This seam will look better after it is pressed; the problem is almost solved; the translation will pass, never mind that little corner; slight, shirk, neglect: that is the road to failure. Every one who can be a first-rate something, as Dr. Holland used

to say, has no right to be a second-rate something; for a second-rate something is no better than a first-rate nothing.

For the Bathroom.

A square of gray linen or cretonne and a corresponding piece of rubber cloth can be quickly transformed into a useful article for the bed or bathroom. Join them with a binding of a contrasting color, fold the corners over to form the pockets, and sew them through the back. Make a sponge-bag of the rubber cloth and attach it to the back. Sew a piece of the binding on in loops



A BATHROOM CONVENIENCE.

to slip the toothbrushes through, and small rings, as here designated, to fasten it on the wall. If preferred, a piece of heavy pasteboard can be slipped between the outside and inside before it is bound (after the pockets have been folded over so there will be only the two thicknesses), but it will be found more convenient in a pliable form to carry in a trunk or satchel.

A Novel Flowerpot.

The accompanying illustration shows a very simple way of making an odd little flowerpot to set among the orthodox pots on the windowsill or the flower stand. It is made of a cocoanut shell, pure and simple. The shell is sawed in two parts, a little above the middle line, and the smaller portion taken for a standard. A little round piece of wood is placed between the two parts to form a sort of stem, and to allow a firm foundation for screwing them solidly together. Then the flowerpot is complete. It could hardly be more simple, and it is quite a novel little affair, besides being useful. It will look better if left in its natural, rough state, but if one wished to improve upon nature, the outside could be smoothed off and painted.

COCOANUT SHELL FLOWERPOT.

Baby's Bibs.

A couple of silk bibs, made after the diagram shown here, will make an acceptable present for the new baby, viewed from mamma's standpoint

SILK BIB FOR A BABY.

at least. Three-eighths of a yard of the best quality of India silk will make four, the best quality being wider than the cheaper kinds. They are triangular shaped with a little slash on the bias side, the corners turned over to form the collar. Baste in a hem and finish in feather stitching or hemstitch all around if you are skilled at this work. Edge with pretty lace and set a triangle of insertion in the corner. These are also very pretty made in white linen.

Hat Pin Cushions.

In these days when hat pins are as much of a fad and of a necessity withal, as stick pins, it is desirable that appropriate receptacles be provided for them in order that they shall not mar the dainty toilet cushion with their huge perforations. Where a suspended cushion seems most convenient the always attractive little Japanese doll may be utilized. Choose one with a head measuring six inches in circumference. To dress one, as shown in Fig. 2 in the illustration, fold a half yard of three-inch ribbon together and crease it to designate the bottom of the cushion. Sew thirteen small gilt spangles along the bottom, with a gilt bead in the middle of each to fasten it on. Overhand the sides of the ribbon to within an inch and a half of the opposite end; stuff with hair or wool and fasten it around the doll's neck. A half yard of the same ribbon is cut in two and folded lengthwise for the sleeves; overhand, turn in the ends at the bottom, and attach to the dress at the shoulder. Now take a yard and a quarter of half-inch ribbon, fasten it over the shoulder and tie about the waist with bow and ends in front, although the really Japanese lady always wears her sash ends behind, neatly tucked up into a sort of roll or cushion. A loop of this same ribbon is fastened to the belt in the back to suspend the cushion by. Decorate the sleeves and shoul-

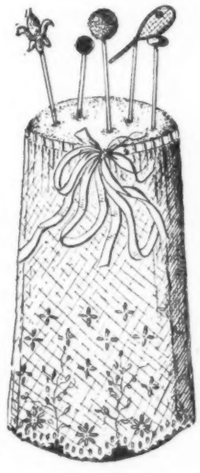


FIG. 1.

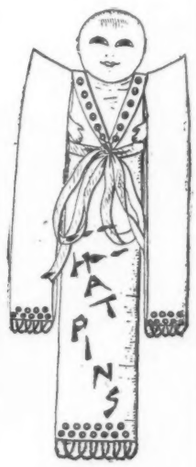


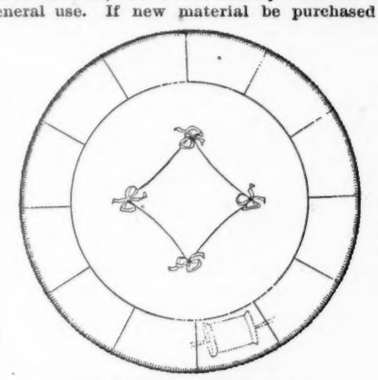
FIG. 2.

der straps with spangles and beads, and finish with a fringe of the beads. Letter on the skirt "Hat Pins" in gilt, forming the letters to look as much like Japanese characters as possible.

The standard cushion shown in Fig. 1 requires a bit of thin cardboard, five by nine inches, for the sides of the foundation, and a circular piece two and a half inches in diameter for the bottom. Cover these with any pretty scrap of silk or plush, fitting the outside snugly about the cardboard, which you have sewn in a cylinder; sew in a piece three and a half inches in diameter for the top, leaving an aperture through which you may stuff the cushion, rounding up the top. If all your toilet appointments are white, cover this with a ruffle of lace of fine dotted Swiss, and tie at the top with bows and loops of narrow ribbon.

Spool Basket.

A spool basket that will delight the heart of the orderly housewife, is here illustrated. It is of so simple a nature that anyone at a glance can grasp the idea. Almost any material one may have on hand can be used for the covering. For this, two pieces nine inches in diameter, are required, and a piece of pasteboard, six inches in diameter, is needed for the center or foundation; this is kept in position by a row of stitching. The edges are finished with buttonhole stitch, or bound with narrow ribbon and divided into twelve equal parts, separated by rows of stitching. The spools are fastened in with a narrow ribbon, which passes through them from pocket to pocket. This is drawn up to form the rim when in use, and flattened out to pack or send through the mail. A little cushion is tacked in the bottom. It can be proportioned to hold any number of spools desired; this is an ordinary sized one for general use. If new material be purchased I



A SEWING-ROOM CONVENIENCE.

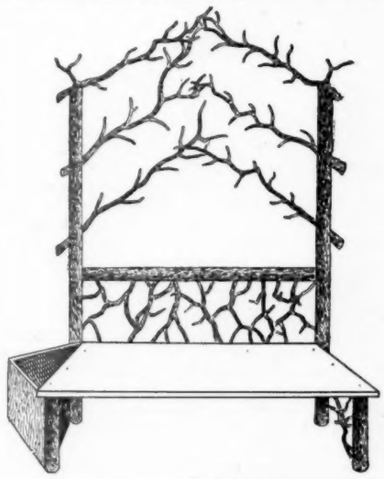
would suggest gray and buff linen or duck for service; while brocades, satin or heavy silk make a more elaborate one.

A Pretty Rustic Hat-Rack.

EDMOND S. MEANY.

We needed a hat-rack, and I one day asked a young friend if he thought he could make a rustic one from the materials he had noticed in our rambles in the woods, for there are weeks at a time when rambles in the Puget Sound woods are enjoyable, even in the winter months. He set at the task with confidence, and the accompanying sketch gives some idea of the result.

The hat-rack is about four feet wide and a trifle over six feet high. The seat is a plank made from a fir tree (*Pseudotsuga taxifolia*). The legs of the seat and the two uprights of the rack are the trunks of young hemlock trees (*Abies Mertensiana*). The intertwined boughs, with the small sprigs, extended outward for hat pegs, are made from the limbs of the madrona tree (*Arbutus Menziesii*). This is one of the most beautiful of Pacific coast trees. It is not a cone bearer, but it is, nevertheless, an evergreen. Its long, oval and serrated leaves, in glossy brightness, making it a great favorite, while its beautiful, smooth, shiny and bright red bark has endeared it to the people to such an extent that you rarely learn of one being cut down or destroyed. This part of the rack is, of course, the main, and at the same time most attractive feature of this prized article of furniture. The back of the seat is made of a straight trunk of a young



PUGET SOUND HAT-RACK.

hemlock like the uprights, and the interwoven boughs are from the great cedar (*Thuya plicata*), from which the famous Puget Sound shingles are made. These boughs were used here instead of

the madrona, because they could be obtained in such shapes as to lessen the danger of catching one's clothes when sitting down to remove overshoes. The frame of the umbrella stand is made of a branch of the tough yew tree (*Taxus bubifolia*), and the sides are covered with the pliable but serviceable cedar bark, which is used so extensively by the Indians in weaving the cloths of their primitive garments. A common tin baking pan is placed in the bottom to catch the drippings from the umbrella.

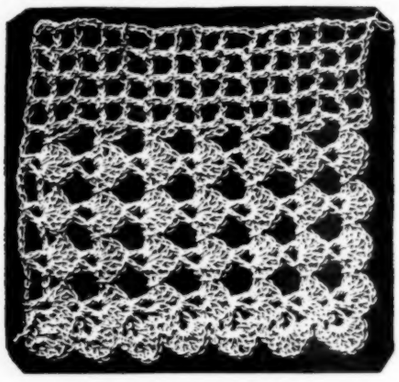
Altogether it is an article of beauty and usefulness, and constructed at little or no expense. This success has inspired my young friend to such an extent that I shall soon expect to see about me a rustic summer house, trellises for the ivy and roses, rustic chairs and benches in the garden, and I shall welcome each new arrival—for I am a lover of the woods, and these little contrivances will keep me constantly reminded of my friends—the trees.

Crochet Lace.

The pretty lace, illustrated herewith, has a neat and durable edge. It is complete in two rows, and, therefore, very easily learned and remembered. Make a chain of thirty-seven stitches, turn.

First row—Work a treble in ninth stitch from needle, (chain two, pass two, treble in next), repeat enclosure three times, chain one, treble in same place as last, (chain two, pass four, two treble with one chain between in next), repeat enclosure twice, chain two, two treble with one chain between in same place as last, chain two, single crochet in next stitch of chain, chain two, turn.

Second row—Shell between first two treble (a shell is three treble, one chain, three treble), single crochet over two chain, *shell between next two treble, single crochet over next two chain, repeat from star three times, chain four, treble in first treble, *chain two, treble in next treble, repeat from star twice, chain two, treble in third stitch of chain at top, chain five, turn.



PRETTY CROCHETED LACE.

Third row—*Treble in treble, chain two, repeat from star three times, *two treble with one chain between in the middle of next shell, chain two, repeat from star three times, two treble with one chain between in same place as last, chain two, single crochet in second stitch beyond middle of shell last used, chain two, turn.

Repeat from second row.

A Novel Pin Basket.

This elegant pin basket is as novel an arrangement as it is beautiful and convenient, and is a veritable "catch-all" for all kinds of pins needed in the completion of my lady's toilet. The foundation is a shallow box, nearly twice as long as it is wide; the edge is strengthened by a large wire, held in place by a pasted strip of muslin—which is also pasted down the outside and across the bottom, to increase its durability. The handles, made of the wire, are slipped by one another at the top, where they are bent and fastened to form an oval support for the little upper cushion. The box is covered and bound with rich apple-green plush, and the handles—first wound with cotton—are plush covered also. A cascaded frill of airy lace surrounds the box, and falls on a mat of darker green plush, which is sewed to the bottom. There are three cushions, all covered with soft, loosely-woven pink silk; the two larger ones are shaped like small, square pillows—and are only pinned in place to allow of turning them over when soiled; the smaller one is securely tacked over the crossing of the handles, and is decorated with a draped frill of the lace. This latter cushion is the post of honor—for the tiny gold-headed or

A VERITABLE "CATCH-ALL."

jeweled lace pins, while beneath it, on one side of the basket, may be kept a mixed assortment of ordinary pins, and on the other all sorts of fancy stick pins, which are always so bothersome when mingled with other pins on a single cushion.

For a jewel tray, put a puffed or quilted satin lining in the box in place of the two square cushions. For either use these baskets make lovely ornaments for the dressing table, and are always acceptable as prizes, gifts, or favors.

The Power of Eloquence.

"I made a speech," once said a chief magistrate of the nation, in recounting the proceedings of a certain celebration, "which was characterized as very eloquent. There was not a single fact or a single idea in it: I simply exhorted!"

"What can you do with a man that is eloquent?" asks Emerson. "No rules of debate, no contempt of court, no exclusion, no gag-laws can be contrived, that his first syllable will not set aside and annul." Nothing can stand against eloquence. We all remember Patrick Henry's famous denouncement in court of the countryman who demanded compensation for two steers which had been taken from him by a commissary of the army. After Henry's stirring speech, in which he described the distress of the American army, and the sacrifices of the whole nation for the soldiers, one man cried, "Tar and feather him;" and the words passed from mouth to mouth until the plaintiff was told in a whisper by his legal adviser, "If you do not get out in a hurry, they will do it." America never had another orator to equal the immortal Henry. He was the torrent that carried everything before it. Contemporary history is full of him; even such men as Jefferson and Madison, scholars, who cared little for speeches, left enthusiastic records of his oratory.

Demosthenes, understanding the power of eloquence, declaimed by the seashore with pebbles in his mouth, in order to overcome a natural defect of speech. Henry Clay, for many years, made it a rule to read in some historical book, and then repeat what he had read in a free, off-hand speech, "sometimes in a cornfield, sometimes in a barn with an ox and a cow for audience." Thus he cultivated that facility and affluence of language, and that freedom of gesture which made him such a power and a favorite. We cannot be too often reminded that work tells in this world. What we earnestly wish to be, that we can be; and the boy who in future years hopes to influence men, should cultivate the power of eloquence.

Toilet Table Fancies.

The illustrations accompanying this suggestion show several little fancy trays for jewelry, hair-

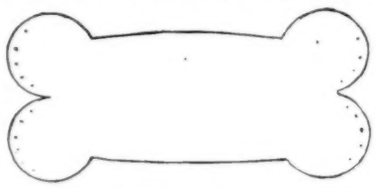


FIG. 1. DIAGRAM OF CANOE.

pins, or any small toilet appurtenances that are easily lost unless they have their special holder. The material used may vary with one's fancy. Celluloid is very pretty and easily manipulated in this way, and as it comes in so many pretty colors, can match or contrast tastefully with the silk used for lining. The diagram for the bit of a "light canoe" is seen in Fig. 1. Small holes are made where the dots appear in the diagram, and through these the stitches are taken which keep the little craft "ship-shape," as shown in Fig. 2. The lining is prettily fluted about the edge of the boat, and bits of bows "fore and aft" finish the whole. The lining may be lightly padded, and sprinkled with sachet powder before fitting it to the outside, though, while this certainly adds to the sweetness of the gift, it rather hurts the transparent effect of the celluloid, if celluloid be used. But other materials may be fashioned into the little boats. If one is still wedded to the good old ways of one's youth, perforated board might be used, as seen in Fig. 3. Or, if one is fortunate enough to possess an artist's soul—and fingers—the material may be rough parchment paper with a bit of a "sea

FIG. 2. THE CANOE FINISHED.

scape" outlined upon it in sepia or water colors. Any of these tiny crafts, when finished in dainty

FIG. 3. CARDBOARD CANOE.

agreement with the toilet table they are to grace, will be very acceptable and useful additions.

Little Girl's Wrapper.

One or two pretty wrappers are now considered indispensable in a little girl's wardrobe, but in designing them care is required to prevent them from having an elderly look. Pretty, youthful colors should always be chosen for them, no matter how bright or gay, if becoming. A design for a wrapper that is especially youthful and girlish in effect is herewith illustrated. The material is soft pink cashmere. The body is a simple Mother Hubbard gown open in front. It has a lined yoke, a standing collar, and large puffed sleeves over those of a plain coat shape. The skirt is scantily gathered in front, quite full in the back, and almost smooth-fitting under the arms. The yoke and cuffs are overlaid with ecru lace net—a pretty, open pattern, but strong and durable. Lace edging, to match, is used for the frills which fall from the neck and from the lower edge of the yoke; while broader lace of the same kind is used for the full sleeve caps and the foot trimming.

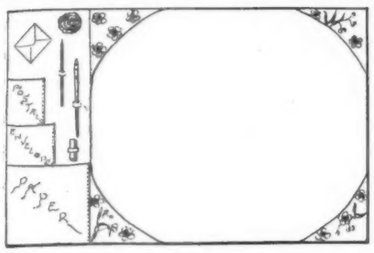
WRAPPER FOR A LITTLE GIRL.

The design is equally appropriate for washable wrappers of summer flannel, chambrey, batiste, dimity, etc. The frills might be of the same material as the wrapper if desired; feather-stitching would form a pretty edge-finish for them, and a row of feather-stitching above a deep hem would neatly finish the skirt.

Lap Tablet.

A writing pad that can be carried about and used on the lap, will be found very convenient, particularly in summer, when one likes to carry all possible work out of doors. For the foundation of the pad, shown herewith, cut two pieces of pasteboard the desired size; cover them with gray linen, drawing it smoothly over one side and gluing it down on the back. The pockets and corners are covered in the same manner over buckram, leaving the outer edge loose to fasten over the upper half of the pad. Stitch them on the inner side and bottom, and add loops of light

blue satin ribbon to slip the pencil, penholder and rubber under. Above them fasten a penwiper made of light blue felt or flannel, and to the left

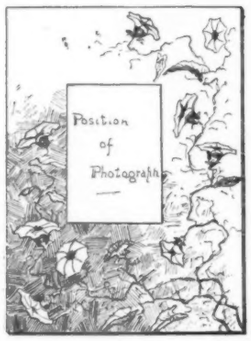


CONVENIENT WRITING PAD.

a blue envelope to hold stamps. A sheet of light blue blotting paper, slipped under the corner, completes the upper half of the pad. Glue the two pieces together and place the pad under a heavy pressure. Decorate it with a few flowers on the corners, and fancy lettering on the pockets.

A New Way of Mounting Photographs.

Those who have skill in painting flowers, either in oil or water colors, can find a chance for the exercise of their skill in mounting a photograph, according to the plan suggested in the accompanying illustration. If oil colors are to be used, let a piece of "academy board" be selected, upon which a background is to be painted in bold strokes, but little blended together. The one from which the illustration is taken shades from a rich brown in the lower left hand corner to a light



AN ARTISTIC PHOTOGRAPH MOUNT.

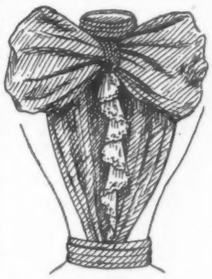
golden brown in the upper right hand corner. The morning-glories, or other flowers, if preferred, should be painted from nature, if possible, using only the colors that will harmonize well together and with the background. If water colors are to be used, let a piece of pulp board be cut of the right size and a piece of water color paper wet and stretched over it, the edges pasted at the back. The mount is then ready for decoration. After the background is laid on a perfectly flat photograph, itself mounted, but preferably unmounted, is to be pasted to the academy board or the water color mount, in the position indicated in the cut. Photographs of friends may be thus treated, but it is better to use photographs of some great paintings, which are now to be had at a trifling cost.

Home Millinery.

If you once learn to tie a bow, you will have no difficulty in trimming a hat. It takes practice, however, and it is well to practice upon some old piece of lining silk or old ribbons. The Virot bow, as it is called, requires a piece of bias silk one yard long and three-eighths wide; the edges are turned in and blind-stitched, making it double, and the two ends are sewed together so that it becomes a circle. Then fold it in four loops, two on either side, the upper ones a trifle longer than the lower ones, and the lower edges of all the loops drawn tighter than the upper edges. Holding the loops in place with the fingers the left loops are turned over the right ones and tied into a tight knot. This makes a knot in the center and confines the bow without sewing. Fasten it to the hat with a fancy buckle and stick pins. To make an Alsatian bow, take five-eighths of a yard of ribbon, six inches wide. Crease the ribbon in a small plait down the center, lay it in two long loops, leaving a three-inch end wrong side out from the last loop; wind this over the center of the loops and sew it down the back. A well-made bow takes away the amateur look from a home-trimmed hat.

To Transform a Plain Waist for Evening.

An arrangement designed to completely transform a plainly-made waist, for ceremonious occasions or for evening wear, is an adaptation of the popular "Incroyable" scarf. The sketch shows the arrangement, which is generally becoming, but is particularly so to one who is a bit narrow-shouldered or hollow-chested. It is represented made of golden brown surah and cascaded ecru lace. A yard and a quarter of surah twenty-two inches wide, and three-quarters of a yard of lace will be required. Cut off thirty inches of the surah; cut it in two lengthwise, and use the two eleven-inch strips for the big bow and the falling tucked-in ends; use the remainder for the folded stock collar and girdle—both of which may be fastened invisibly at the side, or at the back beneath rosettes of the same. The big loops should be fluffed out airily, and deftly pinned to the corsage so as to seem entirely unconfined. Remnants of silk, satin, crepe, etc., might be used instead of new material—if large enough. But the effect is spoiled if a generous quantity is not used. Light diaphanous materials in fancy colors, with frills of the same, or of lace, made up in this way are dressy and becoming for young girls to wear in the evening.



A DRESSY WAIST.

Knitted Lace Braids.

These pretty braids may be knitted of cotton, linen, silk or wool, to correspond with the material upon which they are to be placed. They may be used wherever a narrow fancy braid or gimp trimming is appropriate. They may also be used as insertion, over ribbon bands, in infant's garments, the braid being attached to the cloth only by a few stitches at the middle of every edge scallop. The work is extremely simple and may be very rapidly accomplished. For the narrow braid cast on five stitches and knit across plain once.

First row—Slip one, knit one, over, knit the rest plain.

Second row—Like first row.

Third row—Slip one, knit two, over, rest plain.

Fourth row—Like third row.

Fifth row—Slip one, rest plain.

Sixth row—Like fifth row.

Seventh row—Bind off two, rest plain.

Eighth row—Like seventh row.

Repeat from first row.

For the wider braid cast on five stitches, knit across once plain.

First row—Slip one, knit one, over twice, rest plain.

Second row—Like first row (where the thread was put over twice make only one stitch of it—in this and all other rows).

Third row—Slip one, knit two, over twice, rest plain.

Fourth row—Like third row.

Fifth row—Like third.

Sixth row—Like third; there should now be eleven stitches.

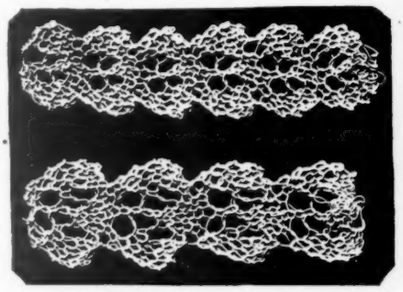
Seventh row—All plain.

Eighth row—All plain.

Ninth row—Bind off three stitches, rest plain.

Tenth row—Like ninth row.

Repeat from first row.



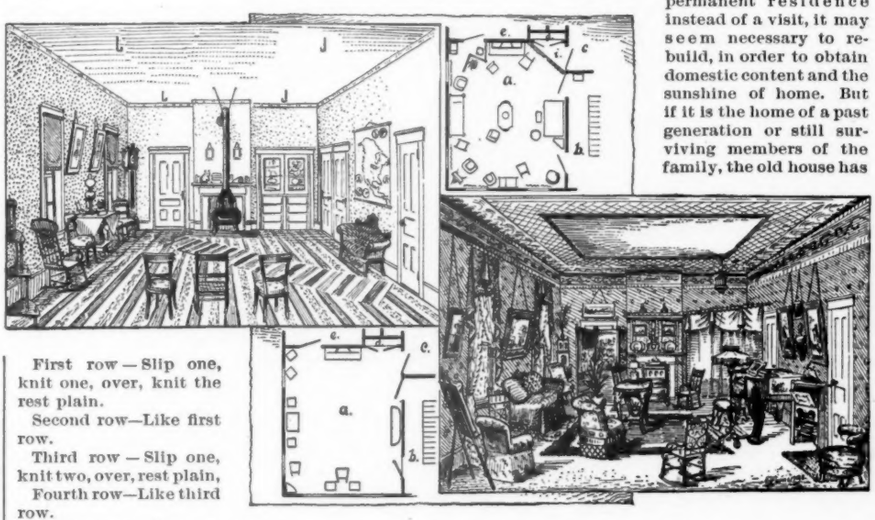
PRETTY KNITTED BRAIDS.

The Farmhouse Parlor.

D. COMINGS.

More veneration than is sometimes shown is really due to the ancestral homes scattered throughout our land. The old colonial homestead, or Southern plantation, so easily passes out of a family, and the once aristocratic mansion becomes, perhaps, a sheep barn, or, if prosperity favors, is replaced by an exaggerated imitation of the colonial style; if this style of architecture were not a popular notion, even this tribute to early American life would be withheld.

What is the reason for this unnatural dislike for the old family residence? It seems to exist more in the unhappy lack of cheer in the interior appearance than in any other objection which the younger people may raise. Perhaps the new mistress comes from a cosy, modern residence in town; or the heir apparent, from the monotonous brown stone front of a city street, visits the grandparents; the contrast may be all very pleasant without, but indoors, where much of the time must be spent, there is often such a coldness that even the most genial hostess cannot overcome the homesick feeling. If the question is one of a permanent residence instead of a visit, it may seem necessary to rebuild, in order to obtain domestic content and the sunshine of home. But if it is the home of a past generation or still surviving members of the family, the old house has associations a new one will never possess. What can be done? Take an old-fashioned parlor for example and let us see what will suggest itself. The illustration herewith gives two views of such a room as might be found adjoining the long central hall of any old two-story farm mansion. This



THE OLD PARLOR AND THE NEW.

large room, *a*, connects by two doors with the hall, *b*, and with the dining room at *c;* the "spare bedroom" is at *e*, and the "best china closet" has invaded one corner at *d*. The room seems unpleasantly large; the white wall paper has a small pale blue or gold "all over" figure and a narrow border where the expanse of ceiling begins, which is broken by the iron hooks suggestive of "apple parings" and "quiltings" of days gone by.

Upon the floor gay stripes of rag carpet stretch away in grand perspective to a wonderfully made stove, a conspicuous object in its brilliant polish, which cranes its smoke-stack, girt with a bright tin collar, to a sublime height, and, steadied by wire guys, apparently thrusts its head in the wall. Below, the mantel hides its fireplace, as a mark of age, modestly behind a fireboard screen. A plaster cat, a conch shell, and such lively bric-a-brac, adorn the mantel, and a "whatnot" is in the corner. The big lamp and a few photographs are on the side table, while some oil portraits or prints of General Scott or Benjamin Franklin bedeck the walls above; opposite hangs a map of North America as a cheering reminder of how big this great lovely world is. The other furniture is drawn up in prim dress parade along the walls, under the lead of a clock of supernatural height and age, which boldly faces any intruder over the main line of travel marked by the diagonal breadth of carpet in the center.

How such a dismal abode can be transformed into a cheerful and attractive room, is shown in the second view. The heavy, solid furniture is found a good substitute in the dining room for well-worn cane-seated chairs; the tall clock is a dignified convenience at the end of the hall. A shelf is put across the chimney above the mantel with small brackets and panels below, and all the woodwork has a fresh coat of white paint. The walls are covered with a modest paper with a large figure in golden or reddish brown on the creamy ground, which is not strong in color, but decidedly pleasanter in tone than white. There is a wide frieze, and the ceiling is edged with a broad border in the same tones, which frames in a deep margin of some geometric pattern of lighter shade; the hooks are removed, except the one near the cupboard, and the center panel is kalsomined or papered in a creamy tone, with a narrow plain band or border at the edge, covering the space where the hooks were.

As the floor is not suitable for staining, a covering of matting, with little dashes of color shot through it, makes a cheap and pretty background for some bright mats and a large center rug. A pole extends across the corner, *i*, where the dining room door and cupboard are, shutting out this objectionable feature and adding the effect of a golden brown portiere. The window shades are cut down to fit inside the frames, or French curtains are used to fill the lower sash; some fancy muslin or lace curtains in front hang from a pole at the lower margin of the frieze, and a scarf-like drapery of India silk fills in the upper space and sweeps down the sides. Any graceful, irregular draping is preferable both for the portiere and the curtains. Such upholstered pieces of furniture as are used are harmonious in general color with the drapery and rugs, and placed with easy freedom about the room; a comfortable old couch is made quite *a la mode* by covering it completely with a Bagdad rug or chenille portiere, draping it to fit closely at the corners and adding a few cushions. Some light, odd chairs can well be added.

The room is large enough to be broken up somewhat, and a gay screen, with three leaves, is well placed beside the mantel in front of the bedroom door, with a large pot of native ferns in the angle. In the corner, behind the screen, a writing cabinet is placed, or the whatnot, with a chair, if there is room. A good, substantial center table, with a lamp, stands upon the rug, and a modest base-burner stove occupies the hearth, if an open fire does not give sufficient heat. A few bits of old china decorate the mantel. Several graceful vases are placed in different parts of the room. A bird cage and holly spray on the hook above the portiere relieve this vacant space. The right of this large room is well adapted for a square piano, with a tasteful music cabinet and lamp.

A few engravings or etchings, and some good pictures in color, all of life and real character, adorn the walls; a portrait is well placed on a corner easel; pictures in black and white or bright water color will look well beside the windows, while oil paintings are more effective on the opposite wall. It will be seen that a great deal of this change can be accomplished without very much expense, as the principal features of the new room could be wrought out by the varied skill and domestic tact usually to be found in a farmer's family. Perhaps this example may aid in bringing a cheerful look into rooms which are now as inviting and prim as a churchyard.

"MOST AS GOOD AS THE SEASIDE."

Uncle Ned's Happy Thought.

EDGARDA WILLIAMS.

"Dear me!" said Mrs. Hall, as Neddie came in covered with dirt from his little bronzed shoes to his golden curls, "I wonder what I can do to keep those children clean." "Lock them up all day in a dark closet," suggested Uncle Ned, laughingly, as he looked down at his small namesake.

"Come here, old man," he added to Neddie. Turning the boy slowly round and round, he gave a prolonged whistle. "Run him through the washer and wringer, Mary," he said, turning to his sister with an amused face.

"It's no laughing matter to me, I assure you, Ned," she replied, and as she spoke, Harry, her eldest child, with little three-year-old Gracie, came in, both as dirty as Neddie. Mrs. Hall rose with a sigh, and led the children away to the bathroom.

"It is a shame," said her brother to himself. "I wish I could do something for her." He remained quietly thinking for some time, and then, suddenly exclaiming, "Happy thought!" strode out into the garden. It was a very pretty place, with beds of roses, pinks and verbenas; a nice grass-plot; and pebbly walks. The children were not content with the grass, however, but loved to play in the dirt at the rear of the garden, where each had a little flower bed of his own. No plants ever grew there, though, because the little ones were so busy digging it up all the time. Uncle Ned took out his pocket rule, and after measuring the place and making some calculations on the back of an envelope, went down town.

In the afternoon Mrs. Hall had to go out to do some shopping. Shortly after her departure a man came with a wagonload of sand. Uncle Ned met him and told him to put it on the children's flower-bed. After it was all ready the little ones were called out to see it. They were delighted, and were soon busy in it with their sand-shovels, filling their tin pails, digging waterless wells and building forts. It was clean white sea-sand, that Uncle Ned knew could not soil their clothes.

"Why, it's most as good as the seaside, Uncle Ned," said Harry, who was wading up to his knees in the soft white yielding mass. "'Es, indeedy," assented Gracie. "Tum see my fort, Unker Ned." "Mine, too," said Neddie.

Their uncle admired and praised them to their hearts' content. All the afternoon they played in the warm sand, their glowing cheeks and sparkling eyes telling of the good it was doing them. At five o'clock Mrs. Hall returned, all tired out, "Ned," she said, meeting her brother at the door, "I had entirely forgotten that Mr. and Mrs. Hooper were coming to take dinner with us and spend the evening. I suppose those children are as black as little negroes, in that garden. It will take so long to wash and dress them all, and make them presentable. You know Mrs. Hooper always wants to see them whenever she comes, and she is so particular, just as neat as wax."

"I think the youngsters are all right, Mary. Come out and see them." He triumphantly led the way, and the surprise and delight of his sister at seeing how clean they and their clothes were, can be better imagined than described. They rushed to meet her with wild enthusiasm, dragging her over to see "Uncle Ned's sandbank," and talking confusedly of forts, wells, shipwrecks, pirates and lobsters, until she had to stop her ears to escape their clatter.

"What a real comfort and help you are to me, Ned!" she exclaimed, as she hurried into the house to give some directions to the cook. He flushed with pleasure and smiled brightly at her praise. After the children had had their faces and hands washed, and their hair combed, they were all ready for the company, whom they entertained with an account of their afternoon's frolic.

Until the snow fell the sand was a source of continual amusement to the three children and their friends. One lady said she always felt so glad to have her children go over to play with the little Halls, for they always came home looking so clean. A good thing is always sure of imitation, so it was not long before there were other miniature seashores in the neighborhood, the owners of which joined in unanimous praise of Uncle Ned and his happy thought.

A Quaint Fashion.

Most of us can remember that the wardrobes of our grandmothers, and, indeed, of our mothers,

were not complete without one or two pretty silk aprons, and at least one of black alpaca. The old-time fashion has become a new one. Hand-painted silk aprons, elegantly trimmed with lace, are worn, and, by those of less means, a dainty little affair of China silk is trimmed with an edging of inexpensive lace, the pocket adorned with a bow. Old ladies wear black satin. For very dressy occasions, an apron of alternate lengthwise pieces of watered ribbon and lace is extremely pretty, and not very costly. Black silesia makes a durable morning apron, and, with a border of Russian cross stitch in wash silk or cotton, becomes very ornamental. For work or garden aprons there is nothing better than bed ticking.

Midsummer Vagaries.

"My dressmaker says I must have a crépon or nothing, and that is so expensive," sighed a young girl to me the other day; and, truly, when fashioned of the finest crinkled and dimpled wool at two dollars a yard, and mounted on silk, a crépon gown is costly. Still, very often there is a passé silk waist and skirt in the house which will do duty as a foundation, while there are some very pretty crépons at much less than two dollars, and it should be remembered that the material is wide, so fewer yards are required than of a single-width goods. The skirts, too, when well cut, need no trimming, depending for beauty on their graceful hang and sweep. A stylish model for the bodice is a round, belted waist, decorated with écru embroidery or one of the guipure laces. Four bands of this garniture are arranged on the corsage, extending from the shoulders to the waist in such a manner as to leave a V of the dress fabric in the back and front. Moiré and jet are also much used on black and dark-hued crépons. Among the most popular summer silks are the taffetas in small checks, generally known as shepherd's plaids. They are employed for whole costumes, for combination with wool goods, for shirt waists, and for the lining of small capes, being always neat, pretty and genteel.

Never were fancy silk waists more fashionable than at present, for afternoon and evening wear, with contrasting skirts, and they are a feature of handsome outing gowns worn under a *garçon de café* jacket. They can be made as elaborate as desired, with cross-bands, yokes and berthas of rich lace. One of the newest designs, known as the French blouse, is an ordinary waist gathered to a belt in the front and back, and given a blouse effect by cutting the fronts fuller at the neck and long enough below to allow of an inch or two droop on the belt, while the back is drawn down straight and smooth. To this, little boleros of another fabric are sometimes added, and the sleeves are the usual large mutton-leg. A dressy French blouse, fashioned of gay-hued gauze, shirred in lengthwise tucks and puffs, and with double ruffles around the arms, is termed the "poppy waist" from some fancied resemblance to that showy flower. Panels increase in favor. Those on street dresses are usually of moiré, while satin ball gowns have them of silk muslin, quilled in double shells, and daintily pinked or hemmed on the edges.

Summer hats are light and airy creations, and a novelty in bonnets is one of pink straw trimmed with black chiffon, black violets, and wee black ostrich tips. Liberty satin and silk muslin are much used on handsome round hats. Unlike the plain sailor hats of last year, those of this summer have considerable garniture. Loops of black lace insertion often extend beyond the brim, and rosettes and clusters of blossoms are poised on each side. One of the most stylish sailor hats for general wear, however, is of white straw, simply trimmed with a band of black moiré ribbon round the crown, and a bow of the ribbon, together with a jetted cock's feather set on the left side.

For midsummer wear in the country, white canvas shoes will again appear with white and light frocks. They are liked because so readily cleaned with pipe-clay, when soiled. Russet Oxford ties, too, are once more in favor for general use, but divide favor with those of black kid tipped with patent leather, or those entirely of the glossy patent leather. High walking shoes are of French kid or morocco, made comfortably large, with low, broad heels, pointed toes, patent-leather tips, and straight-edged laps. A more dressy boot has tops of cloth or kid, and deep vamps of the patent leather. Big bows, with or without rhinestone buckles, adorn house slippers. With white shoes, of course, white hosiery is worn; and many like tan-colored stockings with low suede ties, but black still continues in highest favor, whether of balbriggan, lisle-thread or silk. For evening toilets, as hitherto, the stockings and slippers both match the costume with which they appear.

Nothing is more serviceable in the way of outing gloves than those of buff or white wash leather, that can be cleansed as often as required. These are in loose sac shape, or else buttoned at the wrist. For those who prefer something thinner, however, a really well cut, heavy silk glove is shown, with double-tipped fingers, stitched on the back and fastened by the four large, white buttons now so modish. The heavy kids in dull reds and browns are still in vogue for traveling and shopping, but for dressy occasions, the fancy is for extremely light shades, white, or pearl gray and lavenders, stitched with black.

Parasols are most gracefully arched this season, and in elegant goods; moiré, chiffon and lace are the chosen coverings, while the handles are of natural wood, white enamel or Dresden china. Those of white chiffon lined with pink or yellow are exquisite, but too frail for anything but carriage use. Those of moiré have the stripes running round the cover, and a bow of moiré ribbon on the stick. Black lace pasarols, too, are again in style. Less expensive ones are of taffeta silk in small designs, and are much beruffled. Far better, however, are the sun-umbrellas, good for both sun and shower, and really stylish when of black, navy blue, brown, or maroon twilled silk, which rolls very close and snug, and they have handles of cherry or partridge wood, finished with a wood knob, a hook of colored ivory, or a Dresden ball.

A Book of Summer Souvenirs.

AGNES CARR SAGE.

"Have you ever made a Summer Souvenir book?"

This was the question put to me by a friend some years ago, when we met in a cozy little hotel in the Northern part of New York State, just where the blue waters of the wide-spreading Lake Ontario turbulently flow into the kingly St. Lawrence.

"No, indeed, what is it like?" And it was with curious interest that I examined the one then in process of construction, which she immediately displayed. It was a simple affair, but so pretty and suggestive that I was straightway seized with a desire to "go and do likewise," as I hope may be the case with the readers of these lines, who, when winter wraps the earth in his white furs, take pleasure in turning over the bits of aftermath culled from the happy holiday harvest of outing days and summer friendships, which, alas! are oft as ephemeral as the dancing butterflies that sport their one brief hour and then vanish from the scene.

Accordingly, a fancifully bound blank book—such as was then in vogue for autograph albums—was purchased, and the most graceful leaves and winsome wild flowers were gathered on every excursion made to points of interest in the neighborhood. These rural beauties were carefully pressed, then as artistically as possible arranged upon the pages of the little volume and pasted in position; only those from the same spot, however, being classed together, while to each group—when it could be done—was appended a picture of the nook from whence they came. For my first attempt this was an easy matter, as most of the gay trips enjoyed that season were among those famous islands whose number has, with rare modesty, been placed at one thousand, and of which excellent photographs can be had on all sides for a trifling sum. Indeed, a small book of views cut apart nearly filled the memorial volume, helped out by a few sketches supplied by an artistic fellow traveler. In conjunction with each tiny nosegay and picture were then inscribed the names of those who composed the party, together with the date when the particular point was visited; while to some were also added certain verses that came in my way and appeared strikingly appropriate. Far better, though, would be a record of any incident of the occasion likely to prove of interest or amusement in after time.

A full decade has elapsed since that original little book of souvenirs was gathered together, and yet it lies beside me as I write to-day, and, as I turn its leaves, names recall almost forgotten faces as well as some that must ever be familiar and dear; while, as I inhale the faint, subtle perfume still embalmed within the dry wreaths of blossoms plucked on the borders of the great St. Lawrence so long ago, charming memories arise of those lovely summer isles which

> "have vistas that sweep
> Over land and o'er deep,
> And enchain the admiring vision;
> While the fancy may float,
> In her own fairy boat,
> Far away among islands Elysian."

The following year, a similar collection of memories was made in a picturesque corner of the Keystone State, though there the procuring of views was more difficult. In these days of amateur photography, however, when a Kodak fiend pops up from behind every rock, this could hardly be a stumbling block, and the summer souvenir book of one skilled with pencil or camera might indeed be made a thing of rare interest and beauty that would verily prove "a joy forever." For what could better bring back to mind a delightful mountain sojourn than a familiar view of the "everlasting hills," surrounded by the filmy ferns which you discovered yourself, that blissful August day, nodding close to the brink of a tinkling, baby cascade; or recall those halcyon seaside weeks like the pretty, sail-dotted waterscape framed in old "ocean's fair flowers," the wee irridescent shells and sea mosses of crimson, and green, and gold, while below appear the names, sometimes the autographs, of those pleasant companions who helped to make the happy holiday hours "speed swiftly by on flying feet!"

Hygienic Summer Dishes.

The close, sultry mornings and the hot, uncomfortable nights of July make the ordinary bill of fare appear very unappetizing. There are people (one shudders to think what digestions and constitutions they are imparting to their children by such a course) on whose tables appear an unvarying course of hot, fried or baked meats, indigestible pastries and fried doughnuts the year round. The stomach is a much abused organ and stands a good deal, but your children, even "to the third and fourth generations," must pay for your misuse of yourself. There is not the slightest doubt but that, as a general thing, people eat too much. It is most often the child with the small appetite who weathers successfully many a storm of illness. A small appetite does not mean a dainty one. The dainty appetite looks for means of stimulation which too often include unhealthful dishes. If ever the housewife and mother needs to study hygienic cooking it is in summer. If ever there is an excuse for vegetarianism it is in summer, but this I do not urge other than that there shall be a free use of vegetables and fruit.

Spanish Ragout.—Fry in butter a minced Spanish onion or an equal amount of white onions; add a green pepper minced fine without the seeds, and sprinkle these over six large tomatoes that have been sliced and fried. Put a poached egg for each person on top and pour around a cream sauce, made by adding cream or milk thickened with flour to the butter, in the pan in which the tomatoes were fried. There is no more delightful hot-weather appetizer than this.

Potato Omelet.—Take a pint of cold mashed potatoes and heat over the fire with two tablespoonfuls of sweet cream, beating with a fork until smooth and light. Add four beaten eggs, pepper, salt, and a little nutmeg, and press through a sieve; beat one tablespoonful of butter in a saucepan and cook half of this mixture like an omelet. It is delightful with bacon or ham cut in thin rashers and fried crisp.

Chopped Omelet and Egg.—Have your round steak chopped very fine and freed from skin and sinews; season with salt, cayenne, and minced parsley and onion (a teaspoonful of each of the two latter to a pound of steak), add the beaten yolk of an egg, and make into small flat cakes. Fry in drippings until cooked through and browned on both sides; pour over the gravy, and crown each with a poached egg.

Lobster Cutlets.—Mince a pound of lobster small (the canned may be used), season with salt, white pepper, two ounces of melted butter, two beaten eggs and enough fine, sifted breadcrumbs to make it cling together. Shape in the form of cutlets; dip in crumbs, then in egg and again in crumbs, and fry in hot drippings. These are very palatable with green peas or tomato sauce.

BOYS & GIRLS.

The Cloverdale Rebellion.

AGNES CARR SAGE.

The members of the third class in District School No. 9 commenced the study of United States history last year, and most deeply and enthusiastically were they interested therein. Master Brooks, the new and clever young teacher, had a rare gift for portraying past events and personages. When he described scenes of the revolution, his pupils felt their blood stirred by the veritable "spirit of '76;" seemed almost to hear the hoofs of Paul Revere's horse on the dusty road during his famous ride; even choked down a lump in the throat at the execution of the boy soldier, Nathan Hale; and longed to be one of those, in Indian garb, who helped stir the pot at the exciting Boston Tea Party.

"I tell you, those were the times to live!" declared Rob Hotchkiss; and when vacation came and the Fourth of July loomed up in the near future, the pretty, peaceful hamlet of Cloverdale was bubbling over with a youthful patriotism that exceeded anything ever known there before.

"For now we understand what we are celebrating," said Arty Cameron, who had popped Chinese crackers every summer since he was in knickerbockers, but without any very clear idea as to why he did so.

"That we do," assented Dick Green. "I always used to think of Washington and Adams, and all those old revolutionary wigs as sort of cold, marble-like men, only fit to stick up on pedestals; but Mr. Brooks makes 'em real flesh-and-blood folks. As much so as Farmer Goodwin or Dr. Butts. I really love, too, that little fellow who waited at the door of Independence Hall and shouted,—'Ring, grandpa, ring! Ring, oh ring for liberty!'"

"So do I," cried Rob. "And I only wish some more Britishers would come over here for us to whip. We could do it again, too."

"'Course we could," agreed all the rest, with the bravado of callow teens.

"Well, at any rate we'll have the biggest bonfire ever seen in this county down at the cross-roads," continued Ned Gould; "and fairly deafen all the old women with pistols and cannon crackers. So every fellow scrape together all the pennies and dimes he can, and we'll remember that stunning old Declaration of Independence with a will, and, to be classical, fresco Cloverdale as crimson as a strawberry. What say, boys?"

THE ENGLISH PEOPLE ENJOYED THE CELEBRATION AS MUCH AS THEIR AMERICAN COUSINS.

"Hip, hip, hooray! So we will!" and with three cheers and a tiger, that made Master Brooks smile over the letter he was writing in the now deserted schoolhouse, the boys dispersed.

Swiftly the June days glided by, while the lads worked in the fields, drew water, sawed wood, or did anything that would earn money for their holiday fun, to which they looked forward with eager anticipation; and barrels, boxes, rails, logs, and dry brushwood were collected from far and near, for the gigantic bonfire to be lighted at an open square where three roads met, and directly in front of a picturesque old stone house, where had long dwelt a retired army officer, but which, since his death, two years before, had stood vacant until the previous spring. Then it had been rented by a stranger, who lived there in strict seclusion with two prim, close-mouthed servants and a delicate invalid daughter.

Of this newcomer, though, the boys never thought until, on the first of July, a bomb was suddenly thrown into their rife and ready camp. The sun was setting in all the cloudland glory of ruby, purple and gold, and the cronies of the third class, perched like crows on the top of a rail fence, were resting after the labors of the day. An argument as to the respective merits of certain firearms was becoming heated, when all at once Arty Cameron exclaimed, "Who's that?" and pointed to a small figure skurrying like a rabbit down the road. It presently came dashing up, with starting eyes and panting breath, and proved to be a wizened little urchin, who had been christened Ebenezer Dadd, but who was generally dubbed "Ducky Daddles" by his chums.

"Oh, fellers, oh, fellers!" he gasped, "Isn't it mean? We can't have our big bonfire at the cross-roads, after all."

"Can't! And why not?" demanded Dick Green, whose temper was as fiery as his hair. "Who says we can't, I should just like to know?"

"The selectmen."

"But it's been there every year since I can remember," said Rob Hotchkiss, "Why should they want to change now?"

"Because the party who has taken Captain Bellinger's place objects. You know my uncle is a selectman, and Mr. Maxwell—that's the stingy cove's name—came to see him last evening. Said he 'understood the boys were in the habit of commencing their Fourth of July celebration at midnight, at the cross-roads; but his daughter was very weak and nervous, and he feared the noise right in front of her door would have a serious effect, and make her worse. So he wished the authorities to order the bonfire somewhere else.'"

"Well, that's what I call impudence. A perfect stranger here, too!"

"Yes; and an Englishman at that."

"What — what's that you say, Ducky?" and Dick Green, in his excitement, grabbed the astonished youngster by the collar, and almost garroted him.

"See here, Dick Green, you needn't choke me to death," sputtered poor Ducky Daddles, squirming himself free. "Though he is an Englishman sure enough. Came from London only last winter."

"Ah, ha! Then that's the true reason of his grumbling," cried Ned Gould. "That yarn about his invalid daughter is all trash, and I don't believe a word of it. It's just that he don't want us raking up old wrongs and celebrating the defeat of the Britons under his nose."

"I do believe you are right, Ned," said Rob. "Of course he's a bit sore on the subject. But I don't see why we should knuckle down to Britishers any more than our ancestors did. What right have Englishmen to come over here and tell us what we shall and what we shall not do? I wonder the selectmen stand it."

"Well, we boys needn't," declared Dicky Green, furiously; "and I for one am ready to stand up for our rights, and put that bonfire where it has always been, if I go to jail for it the next day."

"Good for you, Green; so say we all!" chorused the others. After an hour of angry talk, during which a great many foolish things were said, these young rebels clasped hands and vowed to defy the authorities, make it hot for the alien in their midst, and carry out their own sweet will, under the fond delusion that it was the height of patriotism so to do.

The following morning, the order of the selectmen was posted up, and the place for the Fourth of July celebration given as "Ackerman's Meadow," an enclosed bit of pasture land a half mile out of the village. Thither, then, most of the barrels and firewood were carried and stacked up; but our boys secretly reserved a goodly portion, and as soon as the black shadows of night had enfolded the countryside, on the evening of the third, mysterious forms began to flit in the direction of the cross-roads, silently and stealthily, bearing heavy burdens upon their backs, until before Mr. Maxwell's gate arose a pyramid almost rivaling that on the lot above.

There, too, as midnight drew near, was assembled all the third class, mum as mice, and with their hearts beating an anvil chorus against their ribs, but with matches in hand, waiting for the church clock to strike the hour of twelve, and announce that the great American holiday had dawned.

It was the dark of the moon, the wind sighed in the tree-tops, and an owl hooted dismally from the boughs of an ancient willow. The old house, too, was quite still and black, except for one dim light in an upper chamber—presumably that of the invalid maiden.

"Isn't it spookey?" whispered little Ducky Daddles to Ned Gould; but the leaders, Rob and Dick, never faltered, and with steady fingers lighted their pitch knots just as the expected bell tolled out upon the summer air. One, two, three! the matches were scratched; four, five, six! the torches flared up with a little, fatty sputter; seven, eight, nine! Arty pulled out a bunch of giant firecrackers, ready to "wake the night's repose;" ten, eleven, twelve! a column of light from Ackerman's meadow shot up toward the star dotted sky, and the lads stepped forward to burst their surprise upon the Englishman and the township.

The pitch knots were applied to a protruding branch, which crackled and blazed up merrily, and a triumphant "hurrah!" trembled on every lip. But the cheer was "nipped in the bud," and all fell back, as a familiar and authoritative voice cried "Stop!" and Master Brooks, springing into the amazed circle, knocked down the burning brand and stamped out the flame. Then, with a scornful glance at the half abashed, half defiant young faces, he exclaimed: "Shame, boys! for shame! I suppose you consider yourselves brave Americans; loyal patriots. It is very valiant, truly, to come here to annoy a sick girl and disregard the reasonable request of a peaceful citizen! I expected better things of my third class, and am sorely disappointed."

A few hung their heads, for the young teacher was extremely popular, and his opinion highly respected. But Dick growled sullenly—"Well, we don't want Britishers lording it over us!"

"Indeed! And how about your own selectmen? I have failed sadly if, in teaching you the history of your country, I have inspired you with rebellion against rightful law and order!"

"But you haven't, Mr. Brooks," cried Rob, touched by these words. "It was we, ourselves, who did not see things as you put them, but thought we ought to defend an old privilege against outside interference."

"I believe you, you silly young hotheads!" laughed the master. "But there would have been a fine uproar to-morrow if I had not reached here in the nick of time. However, as it is, there is little harm done, and I trust you will make amends, like true American gentlemen, by clearing away all this rubbish before dawn, and as quietly as possible."

"We will, we will," said manly Rob, "and I hope Miss Maxwell has heard nothing. Fall to, fellows, for our brief Cloverdale rebellion is ended."

"In defeat," muttered Dick; but most obeyed cheerfully enough, and bore away the dry wood and barrels, to add to the bonfire on Ackerman's meadow, which, in truth, proved the largest one ever known in that county. There, too, far from the old Bellinger place, the pistols were fired, the giant crackers exploded, and the games peculiar to the "Glorious Fourth" enjoyed. The "Declaration of Independence" was read by the good Dominie, according to an old established custom; a bevy of white-robed lassies, in red and blue sashes, sang "The Star Spangled Banner"; boys ran sack races, climbed greased poles, and chased greased pigs; and strolling vendors dispensed peanuts, candy and lemonade to the hungry and thirsty country youth.

The third class lads entered as heartily into the sports as any one, but Dick Green felt dissatisfied. "I can't bear to think of that Englishman chuckling over our defeat down yonder," he remarked to Ebenezer Dadd, and finally proposed: "Suppose we just go down and sing 'Yankee Doodle' under his window, will you, Duck?"

To this mild form of revenge the smaller urchin agreed, and, slipping off, both made their way, once more, to the cross-roads, where, in a taunting tone, they shrieked the familiar air at the top of their lusty young lungs,

"Yankee Doodle, doodle doo; Yankee Doodle, dandy!
Drive the Red Coats from our shores,
Yankee Doodle, dandy!"

They fairly roared in closing, and then started with surprise; for, back from the piazza, the self-same tune came echoed, only in the soft, liquid notes of a sweet-toned flute.

The small rascals gaped in open-mouthed astonishment. Were they being mocked? But, presently, from behind a screen of vines there emerged a genial looking gentleman who greeted them cordially. "Thank you, boys, for your serenade," he said, "Gay, lively airs always please me. I am glad, too, that you happened this way, for I want to thank all the young folks who so willingly and courteously regarded my wishes about the bonfire last night; and, since my daughter Cecil seems quite bright to-day, ask them to drop in about six o'clock and taste my fine strawberries, which are just in their prime. Will you both come, and, also, be kind enough to carry my invitation to your friends?"

Ducky readily agreed, but Dick was too overcome with confusion to utter a word. "I tell you, I felt small enough to creep through a rat hole," he afterward confided to Arty Cameron.

Nevertheless, he could not resist joining the other boys and girls when, in the early evening, with Mr. Brooks at their head, they all marched down to the old Bellinger place, where they were warmly welcomed by Mr. Maxwell and presented to a pretty, fair-haired maiden seated in a reclining chair, who quickly won all hearts by her gentle manner and the interest she evinced in hearing about the fun at Ackerman's meadow.

"I can never take part in such good times," she sighed, regretfully, gazing almost enviously at the healthy, rosy-cheeked lassies clustering around her, all of whom were filled with admiration and pity for the lovely, fragile young creature, "and sometimes I get very lonely."

"It is too bad," purred the sympathetic little country damsels, but, if you will let us, we will come to see you often and try to cheer you up." For which proposition, Cecil thanked them gratefully and appeared truly pleased.

Meanwhile, the old serving-man had been spreading tables beneath the magnificent oak trees on the velvety lawn, and now passed the great luscious red strawberries and mounds of white ice cream, heaped on plates of rare blue china, a delicate compliment in color to the day, that the quick-witted lads were not slow to appreciate.

"Do berries and cream burn like coals of fire?" remarked Rob to his neighbor, choking over the first mouthful, "But he is a dandy old Briton all the same, and deserves to have been born a Yankee."

"Thank you," said a laughing voice behind him, at which Master Hotchkiss turned in dismay to find he had been overheard by his host. "He is pretty well satisfied as he is, though he

'might have been a Russian,
Or French, or Dutch, or Prussian,
Or an I-tal-i-an!'"

At which quotation all laughed, and began to feel more at their ease.

"Yes," continued Mr. Maxwell, "I am an Englishman and am proud to own it, for he is a traitor, unworthy the name of man, who does not love his home country above all others, whichever that land may be. That is why I am glad to see you all so patriotic. I, too, greatly admire America and Americans, as I think I have proved by coming to live on this side of the water, but I fancy you young folks are mistaken in one thing. That is, in imagining that English people of to-day feel aggrieved at the loss of their American colonies. They scarcely remember it, and certainly with no bitterness, for in the last century the United States was not the important country it is now. You are right to celebrate such an interesting historical event as the signing of your 'Declaration,' but, at the same time, don't forget that many of you sprang from British stock, and I think after more than a hundred years we can afford to shake hands and be friends; don't you?"

"Yes, yes. Hip, hip, hurray, for the Englishman!" shouted Ned Gould, and all made the welkin ring with their cheers, though Rob felt sure Master Brooks had put Mr. Maxwell up to making that little speech, and I suspect Rob was correct.

Very happily, then, the party chatted and frolicked under the trees until nearly dark, when the teacher, jumping up, exclaimed: "Well, boys, if you intend setting off your fireworks to-night, we shall have to be going!"

"Why couldn't we have them here?" suggested one of the girls, while Cecil clapped her hands, begging, "Oh, do, do!"

"I am sure I will be most happy if you would like it," said Rob, looking at Mr. Maxwell, who, perceiving his child's unwonted pleasure, gave an eager assent.

Delighted to make some return to their entertainer, the lads fairly flew for their modest collection of rockets and wheels, and never were pyrotechnics more enjoyed, while, in showers of prismatic balls and golden sparks, the "glorious Fourth" that saw the brief Cloverdale rebellion drew to a harmonious close. When, too, the guests finally departed, the Englishman and his daughter lingered at the gate and laughed merrily as, far down the road, they heard the blithe young voices gaily singing:

"For he's a jolly good fellow,
Oh, he's a jolly good fellow,
Oh, he's a jolly good fellow,
That nobody will deny!"

A Spelling Match.

S. JENNIE SMITH.

"Oh! I learned a brand new word to-day, such a funny one," cried Joe, looking up from his school books to the members of the family who were gathered around the sitting-room table.

"Did you?" said Aunt Clara. "What was it? Can you spell it correctly?"

"Of course, that's what I mean. S-y-z-y-g-y, syzygy."

Clarence looked up from his book now and asked, "Do you know the definition of that wonderful word?"

"Yes, it's in our astronomy. 'The point of an orbit, as of the moon or a planet, at which it is in conjunction or opposition.'"

"I know a bigger one than that," put in Cousin Will.

"Oh! I didn't mean it was so large, but unusual," said Joe. "Just think, the letters are all long but the first, and I suppose we could write a long *s* if we wanted to."

"What is your word, Will?" some one asked.

"Endecaphyllous. It is a botanical word. It means, having eleven leaflets."

"What spellers our boys are getting to be," laughingly remarked Aunt Clara. "Nell, are you going to let them get ahead of you? What wonderful word can you spell?"

"Nothing. We can't all be talented, you know, auntie. But I did hear bench spelled in a very unusual way at the entertainment the other evening—b-e-e-nch, bench."

"That reminds me of the way in which we spelled potato when we were girls," mother remarked to Aunt Clara. "Don't you remember? put-one-o, put-two-o, put-three-o, put-four-o, put-five-o, put-six-o, put-seven-o, put-eight-o."

"Yes, and Constantinople, too," was the reply. "It was very silly, but all the children said it in our day. C-o-n a kizi con, a constanti, and a t upon a nople, and a Constantinople."

The boys roared. "Well, that was a way to spell," laughed Clarence.

"But not so queer as the way in which every school child reads preface," observed Nell.

"No, I suppose not. When I was in school I really thought that preface meant 'Peter Riley eats fish and catches eels,' and then backwards, 'Eels catch alligators, fish eat raw potatoes.' I wonder who made up that nonsense anyway."

Presently Clarence exclaimed, "Say, wouldn't it be fun to have a spelling match here to-morrow evening, just among ourselves, you know. We can each look for a long word, and see who can find the longest."

"All right," assented Will, "I suppose we can find them anywhere, in any paper or book?"

"Yes, if they have been printed," returned Aunt Clara, who was always ready to help the girls and boys with their play as well as with their work, "we will accept them."

Grandfather, who was sitting by the fire, had been listening quietly to the conversation. Now he seemed to be chuckling to himself over something, and when one of the folks remarked that none of them could expect to get ahead of Clarence on words, he smiled harder than before. But none of them noticed it. Grandfather was supposed to be asleep, and, therefore, not interested in what was going on.

The next evening it was apparent to the older members of the family that Will, Nell and Clarence had each found a very long and unusual word. They said nothing, but they looked important, and after father had spelled "chronogrammatical," the longest word he could find during a very busy day, and mother had given them "isothermobathic," and Aunt Clara "synclinorium," Nell spelled her word. It was this:

"S-e-n-i-c-a-t-e-g-o-r-i-c-a-l-m-a-t-i-c-a-l, senicategoricalmatical."

"And you really found that in print?" asked father.

"Yes," was the reply; "it was said to be the name of a pudding in a down-town restaurant."

Then it was Will's turn. He spelled, "T-r-a-n-s-m-a-g-n-i-f-i-c-a-b-a-n-d-a-n-j-u-a-l-i-t-y, transmagnificabandanjuality."

"The meaning, sir?" demanded Aunt Clara.

"I found it at the head of a circular. I presume it meant take notice, or something of that kind."

Clarence seemed eager to begin. He was sure he had the longest word. He had found it in a newspaper, and it was the name of a man, or supposed to be. Here it is:

"H-a-n-s-v-o-n-d-e-r-n-i-c-k-e-l-e-r-v-o-n-f-u-s-t-e-n-g-z-i-l-i-c-a-n-h-a-u-s-e-n, Hansvondernickelervonfustengzilicanhausen."

There was a hearty applause when Clarence had finished, and Aunt Clara, going to a closet, brought out a very large leather medal with the words, "Champion Speller," printed on it. Just as she was about to hang it on the boy's neck, grandfather surprised them all by crying out, "Look here, you haven't given me my chance. Don't you know I used to be the boss speller of the West? There was one word that few of them could get around their tongues, or get their tongues around, I should say. I believe I remember it yet. Would you like to hear that?"

"Of course," they all exclaimed.

"Haven't any objection to compound words, I suppose?"

"No, not if they have been in print," said mother.

"Well, then, this is all right. It's been in Western papers more times than I can count. Now, here it is, and I always spell it before I pronounce it. That is, I pronounce each syllable alone as I spell it."

They all settled down, grandfather cleared his throat, and then started in:

"A is an a; b-o-m bom, is a bom, is an abom; i is an i, is abomi, is an abomi; n-a na is a na, is an ina, is a bomina, is an abomina; b-l-e ble is a ble, is a nable, is an inable, is a bominable, is an abominable; b-u-m bum is a bum, is a blebum, is a nablebum, is an inablebum, is a bominablebum, is an abominablebum; b-l-e ble is a ble, is a bumble, is a blebumble, is a nablebumble, is an inablebumble, is a bominablebumble, is an abominablebumble; b-e-e bee is a bee, is a blebee, is a bumblebee, is a blebumblebee, is a nablebumblebee, is an inablebumblebee, is a bominablebee, is an abominablebumblebee; w-i-t-h with is a with, is a bee with, is a blebeewith, is a bumblebeewith, is a blebumbeewith, is a nablebumblebeewith, is an inablebumblebeewith is a bominablebumblebeewith, is an abominablebumblebeewith; i-t-s its is an its, is a withits, is a beewithits, is a blewithits, is a bumblebeewithits, is a blebumblebeewithits, is a nablebumbleewithits, is an inablebumblebeewithits, is a bominablebeewithits, is an abominablebumblebeewithits; t-a-i-l tail is a tail, is an itstail, is a withitstail, is a beewithitstail, is a blebeewithitstail, is a bumblebeewithitstail, is a blebumblebeewithitstail, is a nablebumblebeewithitstail, is an inablebumblebeewithitstail, is a bominablebumblebeewithitstail, is an abominablebumblebeewithitstail; c-u-t is a cut, is a tailcut, is an itstailcut, is a withitstailcut, is a beewithitstailcut, is a blebeewithitstailcut, is a bumblebeewithitstailcut, is a blebumblebeewithitstailcut, is a nablebnmbleewithitsitstailcut, is an inablebumblebeewithitstailcut, is a bominablebumblebeewithitstailcut, is an abominablebumbleebeewithitstailcut; o-f-f off is an off, is a cutoff, is a tailcutoff, is an itstailcutoff, is a withitstailcutoff, is a beewithitstailcutoff, is a blebeewithitstailcutoff, is a bumblebeewithitstailcutoff, is a blebumblebeewithitstailcutoff, is a nablebumblebeewithitstailcutoff, is an inablebumblebeewithitstailcutoff, is a bominablebumblebeewithitstailcutoff, is an abominable-bumble-bee-with-its-tail-cut-off."

I presume it is hardly necessary to mention that amid shouts of laughter grandfather was awarded the leather medal.

The Fourth of July, 1676.

FRED MYRON COLBY.

The Declaration of Independence made by our forefathers on the Fourth of July, 1776, was not the first assertion of liberty-loving men against tyranny in this country. One hundred years before the Revolution, the "Great Rebellion in Virginia" appeared as the forerunner of the more famous contest that was to follow.

This rebellion of 1676 is the most striking occurrence in American history for the first century and a half after the settlement of the country. It was an armed defiance of England, and was as passionate and noble a struggle against oppression as was that later conflict which overshadows it.

The settlers in America brought with them the English love of freedom, and were always ready to assert their right to the "liberties of Englishmen. This passion for freedom was probably stimulated by the hardy, independent life of the pioneers. Nor was the climate favorable to the nurturing of oppression.

Free government was first established in America by the Virginian charter of 1618, but scarcely had the first colonists settled themselves in the wilderness before they were made to feel the oppressive hand of the motherland across the sea. In the first place, the king took away their charter and the government of the colony was assumed by the crown and vested in a governor and twelve councilors, appointed by the king. Then, again, many of the governors sent to rule them were haughty and bigoted men, and disposed to be tyrannical.

Perhaps the worst type of these unworthy governors was old Sir William Berkeley, who received his commission as governor of Virginia from Charles I. in 1642. In the early part of his administration he seems to have been a popular governor, but in his long rule of thirty-five years he had time to develop the bad side of his character. Being confirmed in his office by Charles II., upon his restoration, Berkeley ever after seemed to devote himself to restricting the liberties of the colonists in North America.

He was a sturdy, bigoted old despot, a devoted royalist, and opposed to all kinds of reforms or improvements. In a letter to his royal master he expressed the sentiments of the man. "I thank God," he said, "that there are no free schools nor printing presses, and I hope that we shall not have them these hundred years."

So obnoxious were some of Berkeley's acts, that the Virginians sent agents to England to lay their grievances at the foot of the throne. But the king chose to forget Virginia's loyalty to him in his exile, and the people could obtain no redress. To add to their troubles, an Indian war broke out in 1675.

The Susquehannas, driven from their ancient abodes by their enemies, the Iroquois, swept down upon the settlements upon the Potomac and the James, and committed serious depredations along the whole frontier. For some time a fierce border warfare raged, with all its cruel concomitants. John Washington, a great grandfather of George Washington, led a band of settlers against the savages, but their depredations did not cease. Every day some new Indian outrage was reported.

The people solicited Governor Berkeley to take measures for the protection of their lives and property, but as he was making large profits out of the fur trade, he paid no heed to their entreaties. Finally a popular young man applied to the governor for a commission to conduct a campaign against the Indians. The commission was refused, and Virginia rose in revolution.

The central figure of this great military and political drama was Nathaniel Bacon. He was a young Englishman not yet thirty years of age, who had been educated in the law at Cambridge University, and had come to Virginia several years before this. He owned a large plantation on the James river, below Richmond, and seems to have been a man of means and high social standing.

A cousin of his, Nathaniel Bacon, senior, "a very rich, politick man," was one of the twelve councilors, and, being childless, designed to make the younger man his heir if he had not embraced the popular cause. But the fiery, generous heart of young Bacon was touched by the wrongs of the people, and though Berkeley had tried to buy him by giving him a seat in his council, he volunteered to become their leader and take the field without any other commission than his sword.

Bacon was as good as his word, and when the Indians attacked his own plantation and massacred several of his slaves, he put himself at the head of a force of "good housekeepers well-armed" and marched against the savage foe. This act, of course, made him a rebel.

But the brave young leader did not hesitate. He defeated the Indians in a sharp encounter, and marched back to the lower James with his small body of well-armed housekeepers, followed by a picturesque procession of forest captives.

The victory of the plucky "rebel" set all Virginia on fire. Berkeley and his partisans could do nothing to allay the storm. The old Legislature was dissolved, and a new one of totally different principles was elected, of which Bacon was one of the members.

The new House gave Bacon a commission, but the governor refused to sign it. Meanwhile the Indians still continued their inroads. Tired of Berkeley's double dealing, the young patriot retired to his plantation, where he was soon surrounded by his partisans, who proclaimed him commander-in-chief of the Virginian forces. At the head of six hundred men he now marched to Jamestown to demand his commission.

On the afternoon of July 3, 1676, Bacon and his well-armed housekeepers, booted and armed with good broad swords and "fusils," appeared at Jamestown and took their station on the green in front of the State house. The gray haired old governor was no coward, and, headstrong as ever, he rushed out before the rebels and their gallant leader.

"Here!" he cried, wrathfully, tearing open the lace at his bosom, "shoot me! 'Fore God, a fair mark. Shoot!"

He repeated this several times, jumping up and down like one crazed by anger.

Bacon was quite as indignant as the old governor, but he controlled himself, and assured Sir William that no harm should be done him. "We will not hurt a hair of your head, nor of any other man," he said. "We are come for a commission to save our lives from the Indians, which you have so often promised, and now we will have it before we go."

The governor fumed and swore, and declared that he would never sign one for a rebel, but Bacon's men surrounded the Assembly building pointing their fusils at the windows and shouting with menacing voices every half minute, "We will have it! We will have it!"

There was a long and exciting discussion in the Assembly. The larger number of the burgesses were in Bacon's favor, and the young leader appeared and made one of his eloquent and fiery addresses, for which he was famous. But nothing was concluded on that night.

The next day, however, after sleeping over it, the governor and council yielded. The burgesses appointed Nathaniel Bacon General and Commander-in-chief against the Indians, and the appointment was ratified by Berkeley. An act was even passed, granting pardon to Bacon and his followers for their previous conduct.

It was the Fourth of July, just one hundred years before the time our Declaration of Independence was signed, when Berkeley signed Bacon's commission. It is an interesting date to keep in mind. In fact, the whole story of "Bacon's Rebellion" shows that for a whole century before the separation of the colonies from the mother country there was in the hearts of the people the spirit of resistance to tyranny and oppression.

The brave young leader died shortly after this of a fever brought on, no doubt, by his exposures in the Indian campaigns. He appears and disappears like a meteor across the early Virginian skies, and goes into the mist with Berkeley, his adversary, his well-armed housekeepers, the blundering old Assembly men, the Indian sagamores, and all the dead figures. But his spirit survived, and a hundred years later it was to speak again in the burning words of Henry, and in the carefully studied lines of Jefferson.

United States Calendar Problems.

The solution of these equations will give twelve important dates in United States history; the unknown quantities represented by letters O to Z are the answers in like order from January to December, one letter each month. The day of the month is given by the first quantity after the sign of equality; the year is found by the solution of the entire equation. Exponents and signs have the usual algebraic significance; an *M* stands for 2, or the day of the month of the first Monday; with one line beneath the *M*. it stands for 9 or the second Monday; *A* is the sum of the days in the first week, *B* of the second, etc.; *E* is the sum of the Sundays, *F* of the Mondays, etc. What are the dates, and what happened on those dates?

U.S. Calendar problems.
S. M. Tu. W. Th. Fr. Sa.
1 2 3 4 5 6 7 A.
8 9 10 11 12 13 14 B.
15 16 17 18 19 20 21 C.
22 23 24 25 26 27 28 D.
E F G. N I J K.
o = Tu + (A × I) + 2Th.
p = M + 10D + K + W.
q = S² + E² - 2C - W.
r = Th + 30H + B + 2M.
s = Tu² + 23B - 2F + W.
t = Tu + (J × Th) + 3Sa.
u = W + (11G × Tu) + Sa
v = S + (J × Th) + M²
w = S + (Sa² - W²) - Tu.
x = Sa + 4Sa² + M + W.
y = M + W³ + 6K + 5M.
z = W + 37F + 2Th - S.

For the best answer we will give three dollars in cash, for the second best answer a year's subscription to the AMERICAN AGRICULTURIST, for the third best answer a telescope, and for the fourth best answer a jackknife. All answers must be mailed on or before August 1st, and must be addressed to Puzzle Editor, AMERICAN AGRICULTURIST, 52 and 54 Lafayette Place, New York.

THE ANSWER TO THE APRIL PUZZLE.

1, Lowell Mason; 2, Robert B. Thomas; 3, John Adams; 4, Eastman Johnson; 5, James Fennimore Cooper; 6, Gould Brown; 7, Louisa May Alcott; 8, Stephen Alexander; 9, James Walker; 10, John Trumbull; 11, Gerrit Smith; 12, Charles Dudley Warner; 13, Noah Porter; 14, John Rogers; 15, Robert Treat Paine; 16, William Thomas Green Morton; 17, Charles Morris; 18, William Beach Lawrence; 19, Esek Hopkins; 20, Richard Henry Dana.

THE PRIZE WINNERS FOR APRIL.

First Prize—Mrs. A. R. Tirrell, Massachusetts; Second—Myra W. Conner, New Hampshire; Third—Mrs. N. J. Mize, Illinois; Fourth—Mrs. M. E. Cooper, Minnesota; Fifth—Mrs. C. Eugene Ludden, Maine.

OUR LITTLE FOLKS.

Teddy's Fourth of July Surprise.

DOROTHY BELLE.

Teddy had been very naughty. A boy, bigger than Teddy, had dared him to do something that he knew his mamma had told him not to do.

"Come on," said the big boy. "A spanking don't last but a minute, anyway, and you'll have lots of fun." So Teddy "come on," and now he was sitting very soberly, in grandma's room, trying to forget papa's stern rebukes and mamma's sad eyes. He hoped grandma would pity him and tell him a story, but grandma did not seem to think that it was a time for story telling.

"Don't you fink the Fourth of July would be somefing nice to talk about, grandma, if you won't tell me a story?"

Grandma laughed. "Well, Teddy, perhaps we may as well talk of the Fourth now, but I hope by that time that we shall have a good little boy here."

"Say, grandma, if you were 'vited to a picnic would you go?"

"That would depend, my dear, on who it was that invited me, and where the picnic was to be. You know I cannot walk very far."

"Oh, you would not have to go far, grandma—only to the woods, by the little brook, you know, and the picnic is to have a great big surprise in it, an awful big surprise! It's long and wound, and—oh, dear, I 'most told, didn't I?"

"Grandma," went on Teddy, "do you 'spose Aunt Ella would come to my picnic if I wrote and 'vited her?"

"I am afraid, my dear, that Aunt Ella is too far away. But you may write and ask her," said grandma, thinking that the letter writing would keep Teddy busy and quiet while mamma was taking her nap. So Teddy brought his little sheet of paper and a pencil and worked away quietly for a long time. Then he brought this letter for grandma to write the address.

"dERE AnTIE LER I Am
Gong To hAVE A PIcknICk
4t OF JEWly WILL you
pLESE CuM yoR
DERE boy TEDDy"

Grandma smiled a little, but folded the letter nicely, and wrote the address in her very best style. Then when mamma came in she and Teddy went to mail the letter.

A few days after came a box directed to "Mr. Theodore Selden Russell, ——, Vermont," and in the box were firecrackers, a little pistol to hold them, and a whole box of tin soldiers to be fired at, and pinwheels and Roman candles and everything to delight a small boy's heart on the Fourth of July. Also a letter from Aunt Ella, saying that she was sorry not to come to her "dear boy's" picnic, but hoped the box would be welcomed in her place.

"Well, 'Mr. Theodore Selden Russell,'" said papa, "did Aunt Ella send you a new set of fingers and an extra lot of eyes, to say nothing of a nose or two, in case of accident?"

But Teddy was anxiously turning over all the things in a great hurry. "Oh, dear, papa, there isn't a single surprise in the whole box!"

"No surprise!" cried papa. "Why, I should say the whole box itself was a surprise."

"But, papa, dear," and then there was a great whispering, which ended in papa and Teddy marching off together after dinner without telling any one where they were going. And when they came home, Teddy had a package "long and wound," as he had told grandma, and which he hid very carefully in the sideboard, where grandma was sure not to find it, for the surprise was to be for grandma, 'specially, and "Oh, wouldn't she dust jump, you know," thought Teddy.

The Fourth was a lovely day—"just made for a picnic," mamma said. It had rained a little in the night, just enough to make everything fresh and clean, and the hot sun soon dried up all the dampness.

After breakfast the baskets were to be packed for the picnic, and Teddy helped (?) mamma make the sandwiches and cut the sponge cake and squeeze the lemons and mix the juice with sugar, all ready for the water from the cold spring in the woods. Papa decided that it was too hot a day for grandma to walk even a short distance, and so he had a horse and phaeton and took first mamma and Teddy, that they might find a nice cool place for grandma to sit, and then came back for grandma and the baskets. Mamma found a lovely place for grandma under a big tree, and where there was a delicious breeze.

"And then, mamma, you know, behind the tree will be such a nice place for the can—the—the—surprise, you know."

Mamma laughed and said, "I think papa must take care that 'the surprise' is not too near to grandma, don't you?"

"Now, mamma, how did you dust guess what it was? Do you fink you can keep from telling grandma?—'cause I does want to surprise her so much."

"Well, I'll try," laughed mamma. Then they went to meet papa and grandma and the basket. Papa asked very solemnly "if anybody knew where the surprise was," when Teddy's eyes grew big with dismay.

"Papa Russell, dust as sure as can be, I left it at home!"

"Well, young man, is that all the executive ability you have?"

"Oh, dear, what does he mean, mamma? I wish he wouldn't tease me. I didn't do anyfing only dust fordot it!" And Teddy looked so forlorn that papa let a little end of the "long and wound" package stick out of his pocket, when all the smiles came back again, and Teddy ran around the woods like a little squirrel.

Such a lovely day as they had! Mamma said it was delightful to be away from all the noise. Here papa and Teddy looked at each other in a very knowing way.

This was while they were having their dinner, which was spread out on a white cloth under the big tree, where grandma sat. Mamma made a long garland of oak leaves and trimmed the edge of the cloth, then she wove some big leaves together for plates, and the table looked so pretty when the "sanwichs" and sponge cake and the "heaps of fings" were on it, that a little squirrel, who was running up the tree, stopped to look at it out of one eye, and with his head over on one side. Papa said he was taking a "squirrel's eye" view of things.

Teddy saw him come down from the tree when no one was looking and get a nut, then scamper on to the wall, and after a great many whisks of his tail, and sharp looks from the corners of his eyes, he sat up and ate the nut, to Teddy's great delight. Mamma said they would leave some for him under the tree when they went home.

After dinner papa and Teddy took a little walk, and when they came back they were very busy behind the tree where grandma and mamma were sitting. Papa winked to mamma as he passed her, but Teddy did not see that, and he and papa were so busy whispering, that he did not hear mamma and grandma whispering, too, on the other side of the tree.

"Now," whispered papa, after he had dug a hole and stood the "long and wound" thing up in it. "I see some one beckoning to me from the road—probably a business telegram—so I will light the surprise, and you go and sit down by grandma. Be sure, Teddy, that you do not go near the thing after I light it, and keep mamma and grandma away."

So papa quickly lighted the little "wick," as Teddy called it, and ran down to the road. Teddy sat down quietly and waited for grandma to jump, but he waited and waited, and nothing happened. How he did long to go and see what was the matter! Then he wanted to go for papa, but mamma said "No," papa was talking business, and Teddy must not interrupt him."

So Teddy put his head down in grandma's lap to hide the tears, and said, "Don't you fink, grandma, that disappointments are very serious fings?"

"Why, yes," said grandma, "some of them are. But what is the matter, dear? Everything has gone off beautifully."

("No, it hasn't," thought Teddy. "It won't go.")

"What is the disappointment, Teddy?"

"Well, you see, grandma, I had planned such a 'booful' surprise for you, and then after all ——"

BANG! went the cannon cracker. But who was the most surprised, do you think,—grandma or Teddy?

Worth More Than All the Relatives.—The first time I saw the AMERICAN AGRICULTURIST was at a visit to some relatives, and the fact is I was at once so taken with it that I devoted more time to reading it than I did to my relatives.

JAMES GOLDEN, Dutchess Co., N. Y.

The Sagebrush of the Desert.

In the arid regions of North America the sage brush, *Artemisia tridentata*, is everywhere present from Dakota to Mexico, wherever the conditions are favorable. The name sagebrush is apt to give a person an incorrect idea of the shrub. The title is not given on account of any resemblance or relationship to the common sage, but merely from its similarity of odor and sage green color. The odor is evolved by friction, and when riding among it the scent of wormwood is always present. There are many species in the interior basin all belonging to the genus Artemisia, one of the Compositæ. The blossoms are inconspicuous, and the leaves never green, but silvery or ashy in color, borne on scraggy stems, rising, generally, from large and wide-spreading roots. These roots are spirally twisted, and unravel, as it were, like the strands of a rope. They are valuable to the traveler, furnishing him with wood when in camp. Obtaining wood in a desert country, is very difficult. To use a well worn expression, one digs for wood and climbs for water. When traveling on the Great Plains, often no wood is seen except the short and scraggly branches of the shrubs; but an experienced ranchman will reveal to you stores of it in the form of roots. For a long time I was puzzled to tell how they knew the exact spot to look for wood, but I found that the location of these masses of roots is always marked by a little mound of sand even when there is no dead wood above ground.

I have noticed, and often wondered at the fact that all specimens met with look as if they had been produced, not only mature but aged. The plant is deficient in chlorophyl, and generally wretched in appearance. It grows in clumps, usually separated a few feet from each other, and surmounting a mound of sand often five or six feet high. The wind is the undoubted cause of the mounds. In the summer little whirlwinds are constantly changing the sand, and in winter and spring the winds raise the dust in clouds, which hide neighboring mountains from view. I have known cañons to have a foot of sand added to their bed in a few days. Winds in New Mexico are almost equally as powerful as water in transforming the face of nature.

RALPH S. TARR, New Mexico.

Summer Life in France.

The people in France make a much simpler affair of every-day life than we, and thus find more time for recreation, which, indeed, is so much a matter of course with them that there is no trace of effort about their little diversions. Where a garden is possible, it becomes furnished with a table and chairs, a much-used outdoor room, roofed with "that dome some three miles high of soft dappled gray and yellow cloud, through the vast lattice work whereof the blue sky peeps." There in pleasant weather, the children play among the lilac bushes and the mignonette; there their elders resort with needlework and newspapers; and there a simple meal is often served. How well-appreciated are the public gardens of Paris any fine day will show. Groups of happy people along the main walks, or in some out-of-the-way nook of the lovely gardens, seem entirely at home as they quietly make the most of their opportunities for pleasure.

A pleasant feature of some French houses is a porch before the entrance door partly enclosed with glass. One such vine-clad summer parlor, opening into its tiny Paris garden, was a most refreshing contrast to the glaring, dusty street from which it was all hidden by a high wall. With its cool summer furnishings, and large ornamental plants in green tubs, it made a delightful reception room for visitors, while a little round table with its load of work baskets and books bore evidence of the family liking for this summer rendezvous. In a pretty country house the space between two projecting wings was roofed and fronted with glass. The room thus gained was one of the most interesting of its kind, being graced with an extensive collection of the ferns of the locality, and guarded by a pair of curious Chinese idols holding back the opened door on either side.

To the American in France it never ceases to be a wonder where so much leisure for out-of-door life is found, particularly as it does not follow that home duties are shirked to obtain it. Indeed the proverbial French thrift is in no way better shown than in the readiness with which French women take a share in the work of the household, even in well-to-do families, and this without loss of dignity, since custom sanctions the keeping of few servants in France. And but few servants are needed, as no baking or laundering is done at home, and polished floors do away at once with dust, and that tearing-up and setting-to-rights process which we call house-cleaning. It would seem that they arrange their days, as well as their household affairs, wisely in France, and are skilled in the happy art of making the most of each one as it passes. For however busy the morning hours may be, in most French homes the long afternoon finds household cares laid aside for a time, while rest and quiet enjoyment take their place.

Perhaps one secret of this wonderful leisure may lie in the fact that French mothers, strange as it may seem, do not consider it one of the cardinal virtues always to have cake in the house, and it really was not evident that the children suffered at all in consequence. It is, therefore, quite possible that the pleasant sight of mothers spending whole happy afternoons with their children out in the open air, may be partly owing to this great lack of ambition in cake making.

The little baskets which French children carry with them to their much-loved parks and gardens are usually supplied with a generous piece of one of the long French loaves of bread, and a bar or two of sweetened chocolate. A few sous procures this quite sufficient lunch, as well as time for those pleasant little expeditions—it may be only to the nearest public garden—which they like and so well know how to arrange in sunny France.

ALICE RATHBONE, France.

Wool Growing in the West.

In "lambing time" on a sheep ranch, the ranchman is as solicitous regarding his flock as is an Eastern farmer concerning his newly planted crop. In a flock consisting of thousands of sheep, hundreds of lambs are dropped in a day, and the herders are kept proportionately busy, seeing that the newcomers are not trampled on, and that the mothers are willing to assume the responsibilities of maternity. Sheep are peculiar in this respect. Often they do not own their new-born lambs, or display the least interest in them. Sheep being so much alike in appearance, it is difficult for the herder to discover to which mother a certain discarded orphan belongs, so the lambling must be carried in off the range to the camp to be fed by hand until strong enough to follow the flock.

After the sheep are corralled at evening the careful herder goes out again over the range to search for missing ones that have not been able to keep up with the flock, for, if left out at night, both mother and offspring would become a prey to the wolves that infest the country. Sheep herders are paid about $25 a month, and get their blankets, tents and provisions, and they earn every bit of compensation they receive. Whether they herd on horseback or on foot, the life of the sheep herder is hard. The plan is frequently adopted of not penning the flock at night, in order to prevent the wool from becoming discolored and soiled, as it must be when a large number of sheep are huddled together in an enclosed space. The flock is driven up into fresh, clean quarters every night; quarters that are unfenced and can be changed as often as seems desirable. Their charge being thus unprotected, the herders must literally sleep with one eye open and one ear on the alert. Often in the silent watches of the night they rise, build fires, fire off guns and resort to other devices for frightening off the wolves.

Sheep are very timid. One of their number, a black sheep, getting up in the night to change his position, will sometime cause the whole flock to dash off frantically, they know not where, afraid of they know not what. The dark shape of the black sheep frightens his companions who are near him, and then it is an easy matter for the panic to be communicated to the rest. The sound of the simultaneous movement of countless scampering feet, a sound resembling the heavy rumbling of thunder, wakens the herders and they must be up and away, following over briar and bramble, scrambling up hills and stumbling down over rocks and stones, until they succeed in heading off the runaways. Perchance by that time daylight is breaking, and the night they counted upon for repose has been spent in fatigue. Another reason for not penning the flock is that the sheep are then at liberty to rise and commence feeding as early as they please, the herders keeping a lookout over them as they prepare their hasty breakfast. The secret of making wool growing profitable is to raise the sheep at as small expense as possible. This can readily be done in a section of country where the grass grows most of the year.

O. GUNBY, Kane Co., Utah.

Washington and the Yakima Valley.

Much of the irrigable region east of the Cascade Mountains was a small Sahara, valueless for ages for the maintenance of vegetable and animal life, yet stored with all the elements of a matchless fertility when the waters of the Yakima river are turned upon it. The soil is sedimentary, almost purely, for decaying vegetation has added nothing to the deposits washed down from the mountains.

The tract is bench land, rising to nearly one hundred feet from the river bottoms, light, fine, compact, until stirred, without stone, gravel, or hardpan, and covered only by occasional tufts of wild grass and a dreary growth of sagebrush. An experiment begun some ten or twelve years ago, on a limited scale, however, demonstrated the fact that the one element lacking was water to make this the garden spot of the State, adapted to all the fruits but the citrus, and all the grains, vegetables and grasses worthy of cultivation in any part of the temperate zone.

Results at the point mentioned, a little below Union Gap, led to the belief that the entire tract for forty or fifty miles, and varying in width from one to eight miles, might be of the same productive nature. Capital was interested, and the outcome is the great Sunnyside canal, with its eight feet of water, varying in width from thirty feet at the bottom to sixty-two feet at the top, and its sub-ditches extending like arms around the elevations and depressions. The water was available over a small portion of the area in 1892, and the results in 1893 were surprising.

W. W. CORBETT, Yakima Co., Wash.

A Wonderful Wilderness.

Only thirty-six hours from New York is to be found a section including a part each of Polk, De Soto and Lee counties, Florida. Geographically, it is the center of South Florida, 25° to 28° north of the equator. The latitude is about the same as Guaymas, Mexico. It is a broad, open plain, covered with pine, oak, palms, etc. The highest hills, not exceeding 150 feet, are interspersed with the most remarkable springs or lakes. They contain from 10 to 10,000 acres, with water always pure and clean, and the temperature of about 70°. Barometric reports for five years show an extreme change of atmospheric pressure of less than one-inch in that entire time. The hottest day at two p. m. last year was 95°, the lowest 34°. The annual rainfall is 52 inches; 75 to 80 per cent. of this falls between June and October. The balance of the year is visited by occasional showers. Deer, hare, quail, wild turkeys and game abound. Black bass and catfish, weighing 30 pounds, are taken from the lakes. Peaches, pears, grapes, strawberries, oranges, lemons, grape fruit, kaki, guavas, pineapples, mangoes, pecans, cocoanuts, kumquat, and other Japan fruits do as well as in their native home. The guava is becoming here what the strawberry and peach are North. Like the grape fruit, it must be known to be admired. The largest pineapples at the Chicago World's Fair were from this region. They weighed over 14 pounds each. The Avocado pear is the fruit of a beautiful evergreen tree. The mango is the most magnificent tree that grows. When in full bloom it presents the most gorgeous spectacle imaginable. Cassava has produced as much as 50 tons on a single acre; grapes ripen in June; 69,692 crates of tomatoes were shipped from one point in Polk county, last year.

J. FLOMERFELT, De Soto Co., Fla.

The Outlook in Ontario.

The hard winter, as a whole, has been a tolerably mild one; fairly steady weather but no very severe spells such as characterized the preceding one; one very heavy storm of snow accompanied

by heavy wind and cold. A regular blizzard struck us on Feb. 12, but it was of short duration. The spring opened early; seeding is well under way; at this writing, April 23d, some farmers have almost completed the grain sowing; not for many years has the soil worked so nicely and easily as this spring; fall wheat, especially that which was early sown is looking remarkably well. Vegetation is starting nicely in all lines. Grass is giving the landscape an emerald hue, and the buds are bursting on the trees. The financial condition of our commercial and agricultural lines seems to be toning up somewhat, and we hope soon to be released from the financial depression, which has held us for some time. Peace and a fair degree of prosperity reign within our borders—for these things we are thankful.

REV. JOHN MORRISON, Ontario, Canada.

Agriculture in the Bahamas.

Until recently the Bahama Islands, off the coast of Florida, were known to travelers only by the excellence of the climate. Latterly, however, the cultivation by planters there of the sisal plant (*Agave sisilana*) has brought the principal islands into notice. Several of the species grow wild, and were hitherto looked upon as a nuisance. The plant may roughly be described as very similar in appearance to the aloe, but it grows to a very large size; indeed, some of the leaves from which the fiber is extracted grow to be fully six feet long, with sharp points at the end, while others have hooks all down the side. There are several different kinds of sisal, but, although they all yield a fiber, they are not all of value.

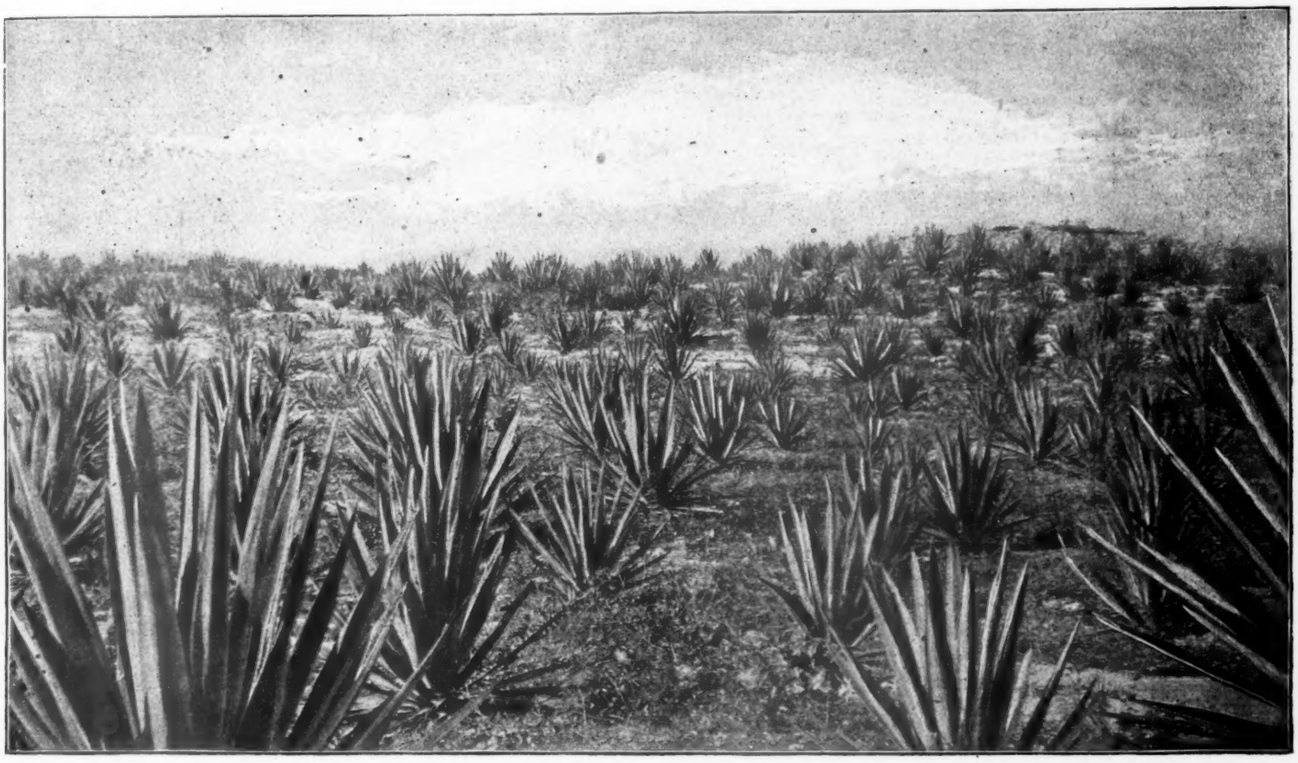
There are fully 6,000 acres of land under active cultivation of the plant, with upward of four million plants in the nurseries. It is usual to keep plants much longer in the nursery than heretofore, as it lessens the cost of weeding, which is an expensive operation. The time which it takes for the plants to mature has been a disputed point; but it is now generally admitted that four years is the usual time, while plants retained in the nursery will mature in three years.

The sisal plant will flourish in the poorest soil—in fact, the more rocky the better—and the planting can be done for about a quarter of a dollar a day. One of the main considerations to any one engaging in this industry is the fact that four years must elapse before there can be any return for the outlay. Another point is that a perfectly satisfactory machine for cleaning the fiber and preparing it for the market has not yet been found, although several do the work fairly well. For well-cleaned fiber, of a high-class texture, as much as $300 to $400 per ton has been paid. In addition to sisal culture, the planters raise bananas, oranges, limes, shaddocks, mangoes, bread fruit, melons, pineapples, and cocoanuts. Among vegetables, they cultivate both the sweet and the Irish potato, peas, beans, tomatoes, pumpkins, lettuce, cabbages, and thyme. Cotton is also grown, the islands being well adapted to its successful production. Oranges grow well, frost being practically unknown in the island. Neither oats nor hay are raised, and both these products are imported from the United States; those who cannot afford to buy them let their horses or mules feed on the leaf and stalks of Indian corn, on the corn itself, and on guinea grass.

The principal trees are the cocoanut palm, tamarind, sandbox, horseflesh mahogany, logwood, ceiba or silk tree, and banyan. Roses, lilies, hibiscus, plumbago, and geraniums grow in abundance.

[The illustration, reproduced from a photograph specially taken for the AMERICAN AGRICULTURIST, shows a sisal field near Nassau, in New Providence, one of the larger islands. The two plants in the front of the illustration represent full-grown specimens four years old, from which leaves can be cut for from twelve to fourteen years before they pole. Those in the background represent plants of about two years' growth.]

F. C. CHAPPELL, San Salvador, W. I.



VIEW OF A BAHAMA SISAL FIELD.

The Hemlock Bark Industry in Vermont.

The manufacture of leather depends, to a very large extent, on the chemical property, which tannic acid possesses, of uniting with albumen and forming a hard, insoluble compound, which may be said to be the basis of leather. Tannic acid—or, as it is more commonly called, tannin—is found in the bark of nearly every species of forest tree, but the quantity in most trees is small. In fact it is found in but four species of trees in sufficient quantity to render the bark of those trees an important article of commerce. These are the sumac, palmetto, oak, and hemlock. Of these, the hemlock is the only kind found to any extent in Vermont, and the preparation of its bark forms an important and profitable industry for the farmer and lumberman. There are no accurate statistics available relating to the production and consumption of hemlock bark, but from such data as I have been able to obtain by personal inquiry at several tanneries, the amount consumed in this State alone cannot be less than ten thousand cords. This, at six dollars per cord—which is about the ordinary price—would amount to sixty thousand dollars. In addition to this, the United States annually imports, from Quebec and the adjacent Provinces, hemlock bark to the value of two hundred and fifty thousand dollars.

Hemlock lumber is coarse grained and not very strong. It takes no polish, and cannot even be planed smooth; hence it is not very valuable. Still it is durable and makes good fencing, and is much used in building, and for stable flooring it is unexcelled. Of late years it has been much used for making shingles. For fence posts, hemlock is classed equal to white cedar, though far inferior to the red kind. It will thus be seen that the timber products of the hemlock are by no means inconsiderable, and the bark equals in value all the rest of the tree. Ordinarily we can calculate upon a cord of bark for every thousand feet of lumber. The price, delivered, is the same, and the wood from the tops will pay the difference in hauling.

The method of preparing the bark for market is very simple. The tree, after being cut, is marked off into sections of four feet each; then the bark is cut through at each section, a longitudinal incision is made the entire length, and, with an iron-pointed instrument designed for the purpose, the bark is pried off. This work can only be done during the summer months. The bark should then be dried for two or three days, when it is ready to be piled, or it may be marketed immediately. No estimate can be given as to the amount of bark a man can peel in a day, as it will vary according to the size and shape of the trees. If the trees are large and free from limbs, the bark will be thick, and come in wide strips, and two, or even three cords will not be an unusual day's work. If, on the contrary, the trees are small and bushy, the bark will be thin and narrow, and a man may not be able to peel half a cord in a day.

C. O. ORMSBEE, Washington Co., Vt.

Long May It Live.—I have been a subscriber to the AMERICAN AGRICULTURIST for twenty-five years, and cannot give it up. Even if I should not send one cent for it, I think it knows the road so well that it would come anyhow. I am sixty-three years old, and hope that God will give me life, health and strength so that I may read it for twenty-five years to come. Long may it live!

W. B. POST, Monterey Co., Cal.

Watermelons, Peaches, etc.—Joseph L. Houghton, Portage Co., O.: 1. Watermelons and pumpkins will not mix when planted near together, but we would not care to risk muskmelons and pumpkins in the same field, especially if they were in bloom at the same time. 2. Peach trees affected with the disease known as yellows should be cut down and burned, but an affected tree may have distributed the germs of the disease before you discovered it; hence, the cutting and burning may not prevent the spread of this pest. But cut up by the roots every tree showing any signs of being affected, without waiting to see whether it will live or not. It is thought that the disease may be stamped out in circumscribed localities, if not in an entire State, by destroying every affected specimen as soon as discovered.

Planting Lima Beans.—H. H. K., Hot Springs, Ark.: It is an old and much disputed problem—how shall we plant Lima beans, eye down or up. Each method has its champions. We have tried both ways, and do not find any material difference. This season we planted the eye down, and at this writing, May 26th, they are coming up finely. Plant a dozen hills each way and note the comparative results.

The Sale of Skim Milk.—Reader, Delaware Co., N. Y.: The prohibition of the sale of skimmed milk in New York city is not due to the Board of Health. It is forbidden by a statute of the State of New York, which applies only to the counties of New York and Kings. The Board of Health doubtless approves the law, but is not responsible for it. It was passed largely because of the demand for it by the milk producers.

The Cabbage Worm.—J. W. Brown, Ontario: The imported cabbage worm (*Pieris rapæ*) appears to be a pest rather difficult to control, owing to the fact that the butterflies remain about from early in spring until late in fall, or, in other words, there is an almost uninterrupted succession of broods throughout the entire season. Of all the insecticides that have been tried for destroying the worms, hot water, pyrethrum, or buhach, and kerosene emulsion seems to be the most effective, and, withal, probably the cheapest. If the first is used, dust the plants thoroughly as soon as the small worms appear on them, and repeat the application as often as may be necessary throughout the summer. If kerosene emulsion is employed, it may be diluted more than when applied to trees for destroying scale pests on trees, that is, make it about one-half the strength given in the standard formula, and spray the plants as often as required to keep them free of worms.

A Handsome Russian Apple.—J. S. J., Burlington, N. J.: The Wolf River apple, which has been commended to you, is one of the comparatively newer sorts of Russian apples. We cannot tell how it would succeed with you. The fruit is very large, flattened, yellowish-white skin, beautifully splashed and colored with red. The flesh is white, of fair quality, and ripens in early autumn. It is a very handsome fruit, and would readily find market. It succeeds well in Wisconsin, where it is quite largely grown.

A Lawn Pest.—Otto Anduae, Orange Co., N. Y.: The small, greenish worms which have recently appeared in such numbers in your neighborhood, destroying the grass on lawns, meadows and pastures, are, without much doubt, the well known vagabond crambus (*Crambus vulgivagellus*). A few years since this pest invaded the grass lands of several towns in St. Lawrence Co., N. Y., and was at first supposed to be the greatly dreaded army worm, but, upon investigation, it proved to be the insect named above. It has appeared at various places in Central and Northern New York during the past ten or twelve years, causing consternation among the owners of fine lawns, as well as among farmers, owing to its rapid destruction of grass early in spring, but it usually disappears as suddenly as it comes, its period of feeding lasting less than a month. These worms are the larvæ of a small night-flying moth, with yellowish colored front wings and paler colored and fringed hind wings. On the first appearance of these worms in spring, applications of lime, plaster and ashes are recommended, but it is quite probable that a good dusting with some fine commercial fertilizer would be far better, and more destructive to the worms, than either lime or ashes. On small lawns, sprinkling with spirits of ammonia in water would probably quickly destroy the worms, besides being beneficial to the grass.

Fruit Prospects.—Apple Dealer, Chicago, Ill.: The indications are now that the apple crop will be a full average, and by reason of the more general practice of spraying, we hope the quality will be above the average. Sutton Beauty, of which you enquire, and to which your attention was drawn at the Columbian Exposition, is a high class winter apple, but has not yet been largely planted. You will not be able to buy it in large quantities. Pears are also very promising.

Peas Not Coming Up.—J. B., Orleans Co., N. Y.: It is no new trouble—this failure of peas to come up, especially of the wrinkled varieties. There are two well-known causes: one is too deep planting in heavy soils, the other that a large proportion of the seed has its germ eaten out by the pea-weevil. The safe way is to plant heavily, using at least three seeds for every one needed. As a rule, you will not have any too many vines. If the seed is infested with weevil, an easy way to destroy them and prevent their propagation, is to pour water, almost boiling hot, on the seed, pouring it off after an interval of fifteen seconds. This will kill the weevil and will not hurt the seeds, if done just before planting.

About Cesspools.—S. M. Thenny, Cumberland Co., Me.: If you cannot drain your kitchen cesspool, carrying the water off to lower ground, then we do not know of any better way than to continue your present system of cleaning it out when it gets full. The liquids and soapy materials removed are worth something as a fertilizer, and should be composted with dry muck, leaf mold, or some similar materials. Of course you can add deodorizers to the materials in the cesspool to prevent bad odors arising therefrom, such as sulphate of lime, dilute sulphuric acid, or even kiln-dried loam, but the better way is to empty the deposit frequently, adding the materials to your compost heap placed in the barnyard, or other out-of-the-way place.

Analysis of Soils.—J. J. B., Ontario: We do not think that the most careful analysis of a few ounces, or even pounds, of the soil of your farm would be of any practical use in determining the quantity or kind of fertilizer needed to make the land fertile. The better way is to take a few square rods of land, and on this try the different materials used as fertilizers—always applying a certain amount or number of pounds per square rod, and then you can readily multiply and determine how much to apply per acre to produce corresponding results, bearing in mind, however, that scarcely any two square rods of soil will be exactly alike on your farm. What it would cost you to analyze one pound of soil will purchase materials enough to make experiments on a number of square rods, and the results in the way of a crop will go into your own house or barn instead of into the pocket of some professional chemist.

Feeding Value of Gluten Meal and Biscuit.—A. R. Johnston, Ontario, Can.: "The refuse from a glucose factory" is often called gluten meal. This by-product, as found in the market, contains about the same amount of dry matter and water as is usually found in corn meal. Gluten meal consists largely of the germ, which is the richest and most nitrogenous part of the corn kernel. About one-fourth of gluten meal is digestible protein, while corn meal contains only about seven per cent. of this nitrogenous ingredient. Experiments have shown that digestible protein is the most valuable milk and flesh-forming ingredient of feeding stuffs. It is not a rational calculation, however, to say that if corn meal, containing seven per cent. digestible protein, is worth one cent per pound, that gluten meal is worth three and one-half cents per pound, because it contains twenty-five per cent. digestible protein. It is a difficult problem to estimate the relative money value of cattle foods although the variations in the prices of feeds correspond more nearly to the contents of digestible protein than to any other ingredient of feeding stuffs. Experiments have shown that gluten meal is a more profitable milk producer than corn meal, corn and cob meal, wheat bran, or ground oats. It should be classed with such grain feeds as oil meal and cotton-seed meal, and not fed in too large quantities. Broken biscuit from a biscuit factory would probably be eaten by poultry and swine, but it would not have so great a feeding value as corn, because the biscuit is composed almost entirely of starch.

Sorrel Among Grass.—J. J. Bradford, Orleans Co., N. Y.: We do not know of any chemical or mineral compound that will destroy or check the growth of sorrel without, at the same time, injuring the grass of meadows and pastures. The old idea that because the sap of sorrel is acid that the plant thrives best in what would be termed a sour, cold soil, is an error, because this weed always thrives in sweet, dry soils, whether rich or poor, but it always succeeds best in fertile soils. If gathered in hay, the seeds are very likely to be distributed in the manure of the animals fed upon the hay; but we do not know of any way to prevent the distribution of such seeds, because they are always present in old meadows. About the only way to get rid of the sorrel is to break up the meadow, cultivate the land with some crop requiring clean cultivation for a year or two, then re-seed with grass and make the land so rich that the grass will grow strong enough to smother out the sorrel.

Have a Good Plant Syringe.—O. P. Potts, Lancaster Co., Pa.: Any one growing flowers in pots, even on a very limited scale, ought to have a good brass syringe. Such an instrument is good for a lifetime, and it will come in play almost daily the year round. With it, effective work can be done in showering plants with water or insecticides, as all parts of them can be reached. The use of the whisk-broom as a sprinkler belongs to the "dark ages" of plant culture.

Larkspurs.—L. Peters, Queens Co., N. Y.: The Dwarf Rocket Larkspurs, although annuals, will flower better if the seed is sown in July, in beds where they are to flower, and the plants lightly covered with leaves upon the approach of winter, to be taken off as soon as the plants commence growth in spring. When treated in this way we have but few more pleasing annuals. If the seed is sown in the spring, the hot weather has a damaging effect on both plant and flowers; the spikes of the latter are not half as long or well furnished as those from seed sown the previous summer.

Comparative Value of Prairie Hay and Timothy Hay.—Henry S. Beeker, Allegheny Co., Pa.: No feeding experiments have been made with prairie hay, so far as we can learn, neither has a chemical analysis of it been published. It is probable that prairie hay in one locality is composed of quite different grasses than what may be called prairie hay in some other place. It is quite generally true, however, that hay which contains a large proportion of grass blades or leaves, is more nutritious than those varieties which have a larger proportion of stalks, stems and heads.

Successful Chrysanthemum Culture.—R. M. Rich, Logan Co., O.: Keep your chrysanthemums growing along steadily. See that they do not get a check from the time you start them to the time they come into bloom. That is the way to secure fine specimens, and, in order to do this, you must give them a rich soil, plenty of water, and such an amount of pot room that the roots are never cramped.

Poultry Lore.—Dr. G. G. Groff, Pa., writes us: I have had one cock to twenty-five hens, and practically all the eggs were fertile. It is a common belief that double the number of cocks is needed. To secure eggs, good wheat should be fed. An old neighbor says: "Feed wheat liberally, and the hens cannot help but lay." I find it true. Last autumn they have scarcely stopped to moult. The droppings from chickens fed on wheat carefully preserved in a dry place, have been analyzed and found to be worth $35 per ton. To prepare for use, they should be mixed with plaster to thoroughly dry them, completely pulverized, and then carefully sifted. With care they can be put in as good

shape as the best fertilizers in the market. The manure from a flock of chickens well fed is nearly worth the cost of their feed.

Management of Hanging Baskets.—B. A. Miller, Bergen Co., N. J.: It is just as easy to grow plants well in hanging pots as it is to grow them in pots on the window-sill, if—mind this if!—if you keep them moist enough at the roots. But this is generally just what we fail to do. Because they are somewhat inconvenient to get at we neglect them, and before we know it they dry out, and one or two repetitions of such an experience puts an end to them. A friend has a little home-made contrivance which does away with this danger of injury from lack of water. He takes a tin can, punches a small hole in its bottom, fills it with water, and places it on the soil in the pot, where it is hardly noticeable among the foliage. The water runs out slowly if the hole is small, or rapidly if large. A little observation will enable one to gauge the size of the hole to meet the requirements of the plant. In this way the soil can be kept evenly moist, with very little trouble.

How to Have Healthy Callas.—P. C. Ellis, Sanilac Co., Mich.: If you give your callas too rich soil, too much water, and a great deal of heat, the leaf-stalks will be lacking in vitality, and break easily. Bear this in mind, if you want to grow strong, vigorous plants with foliage almost as attractive as the flowers.

Buckwheat.—Francis Ronalds, White Co., Ill.: The culture of buckwheat is of the simplest kind. The land should be well plowed late in June. A peck of seed to the acre is sufficient. This is sown on the plowed ground, and one good harrowing is given to cover the seed. The crop matures in about ten weeks, and should be harvested as soon as the grain is set. Although some of it may be green at the time of cutting, it will ripen in the shock. Seventy bushels per acre on good ground and in a favorable season is no unusual yield, but in the usual careless way, twenty-five bushels is an average yield.

Bush versus Pole Limas.—J. Walters, Bergen Co., N. J.: The dwarf or bush Lima beans can now be purchased at such a reasonable price that cultivators should be able the present season to determine their relative value for market purposes. We have heard several gardeners in charge of private places express it as their opinion that the pole Lima would soon be a "bean of the past," but we are not yet convinced that they will disappear from the grounds of those who raise beans for market, for long-established practices and habits are not readily obliterated or abolished. But every one who has a garden should try the bush Limas and endeavor to determine their relative value with the pole varieties.

Pure Milk.—H. C. J., Orange Co., N. Y.: Legal milk in New York must contain not less than twelve per cent. of solids, three of which at least must be butter fat. It is condemned as adulterated if less than the above solids are found in it, even if it be as pure as it came from the cow. Milk is also considered in law adulterated if drawn from the cow within fifteen days before or five days after parturition, or from animals fed on foods in a state of fermentation or putrefaction. No producer is allowed to take from or add anything to the milk. The addition of a preservative or any antiseptic also renders the milk adulterated and liable to confiscation.

University Extension.—P. Clinton, Oneida Co., N. Y., writes us: The application of the University Extension system to our farmer's needs has been inaugurated. The Farmer's Club of Central New York has been favored with a course of lectures on local geology, botany, etc., for two years. Applied physics and political economy have also been among the topics. The lectures were mainly by professors of Hamilton college. Why not apply the same system to our county and State fairs? Why should not one day out of three, or perhaps one-half of each day, be spent in lectures and discussions on household and farm topics? Each department is now greedy for prizes; it might be made zealous for information. We are entering a new era of farm life; competition will consist in the application of brains to the land. But of all the suggestions for progress recently made, the best is the proposition of some of the Professors of the University of Pennsylvania to arrange field excursions for the schools of that State to compete in collections of wild flowers. The excursions will involve a thorough study of local botany. The University also offers to open its museum for special visits of all such collectors, where they may receive, free of charge, instruction in the subject they are investigating. This is on a line with the tendency to make our colleges useful for all the people as well as for a special class of students.

Sorghum Cane for Molasses.—Stanley Adams, Coles Co., Ill.: The soil should be prepared for sorghum or northern sugar cane very much as it is for corn, and it is planted at the same time or a few days later. It may be planted in hills and check-rowed, but planting in drills is a better practice as it thus yields more, and cultivation can begin earlier. The slender young plant can be seen in the drill better than in the hill. The corn planter may be used, dropping as few seeds in a hill as possible, or very thinly in the drill. Surplus plants may be removed when the crop is hand hoed, which is almost always necessary, because the weeds are nearly as large as the young plant. Early Amber is a good variety for molasses. Sorghum requires about the same cultivation as corn. When the seed begins to color, the stalks may be harvested, first cutting off the tops with the seed, and removing the leaves by stripping down the sides of the stalks with a stick. The riper the seed the more molasses can be made. Stripped cane should be manufactured as soon as possible. In case of severe frost, cut and strip the cane, and store in small bundles, in the shade, so that the air can circulate between them.

Best Watermelons.—W. C. Hill, Bergen Co., N. J.: The three varieties of watermelons most largely grown in Georgia are the Georgia Grey, Jones and Kolb's Gem. Many other varieties are grown in greater or less quantities, but the three above named lead in the markets.

Cos Lettuce.—Amateur Gardener, Michigan: Cos is as easily grown as any other lettuce. It has not been heretofore largely grown for the American markets, but is gradually coming into favor. It is very popular in Europe, where it is largely used. The long, narrow heads are tied up with twine or basswood bark, and when thus blanched, are very delicate, as well as attractive to the eye.

The Ogon Plum.—J. C. Keller, Fairfield Co., Conn.: We would not advise planting largely of the Ogon plum. It is a small, yellow fruit of rather inferior quality. The Burbank, Abundance or Botan, and the Satsuma are all better in quality and larger in size. All may, we think, be profitably grown. They come into bearing early, are productive and of fair quality. The Ogon has one good quality—it keeps quite a long time after being picked.

Dandelion in Lawns.—B. L. K., Middletown, N. Y.: We know of no way of eradicating dandelion from a lawn except digging it out. We have thus treated quite a large lawn this spring. Taking a basket and a sharp garden trowel, we went to work. Shove the trowel under the dandelion, cutting off its taproot an inch or two below the surface, lifting on it with the other hand. Put it in the basket, and so go over the lawn. This method will not mar the appearance of the grass. The task is not so tedious as one would think, and it is effective. Red Top makes a velvety lawn.

Ostrich Eggs.—A Subscriber, Homer, Ohio, desires to obtain ostrich eggs for hatching. Ostrich eggs are not a regular market article. If they can be had at all, it is of the American Ostrich Company, Mt. Fairview, San Diego Co., Cal., but so far as we have been informed, this company hatches all the eggs of the birds they own.

Holding for Higher Prices.—L. Higby, Macoupin Co., Ill.: There are, no doubt, times when it would be good policy for the farmer to delay the selling of his products in order to secure better prices than could be obtained in a crowded market. But the man who attempts this should bear in mind that he is taking some risk in the matter, in addition to the chances of the price going in his favor, for there are usually many enemies near at home to take advantage of any considerable accumulation of farm products. If one holds over the season's clip of wool, noxious insects may get in, as they often do in woolen goods, and do a great deal of damage. The same is true of stored grain, for corn, wheat, oats, rice and other cereals all have their insect enemies, which multiply rapidly when they once find a lodgment where there is plenty of congenial food. There is more than one instance on record where the minute grain pests have caused famines in countries where grain had been stored in large quantities to feed the people and their animals.

The Cumberland Strawberry.—Fruit Grower, Kingston, N. Y.: You will make no mistake in planting Cumberland, formerly known as Cumberland Triumph, which you say has been recommended to you, as one of the sorts of strawberries in the acre you propose to grow. It is a perfect flowered variety, the fruit is large, handsome and uniform in shape, and of very good quality. It is not as solid as some other sorts, but for a home market it will answer your purpose very well. It has been largely grown for many years, and is generally successful.

Apples for Cold Storage.—S. T. K., Rochester, N. Y.: Some varieties of apples do not stand cold storage as well as others. Fallawater, Hendrick's Sweet, Peck's Pleasant, R. I. Greening, Wagener, Egg Top and others are apt to show a scald or discoloration of the skin, which, while it does not seem to impair their quality, injures their sale. Baldwin, Jonathan, Newtown Pippin, Roxbury, English and Golden Russets, Spy, Canada Red, Hubbardston Nonesuch and Talman Sweet show no signs of discoloration from cold storage, and keep a long time after coming out.

Durable Whitewash.—A Subscriber, Durham, N. C.: The following is sent out by the Lighthouse Board of the Treasury Department: "The following recipe for whitewashing has been found by experience to answer on wood, brick and stone, nearly as well as oil paint, and is much cheaper: Slake half a bushel of unslaked lime with boiling water, keeping it covered during the process. Strain it and add a peck of salt, dissolved in warm water; three pounds of ground rice put in boiling water, and boiled to a thin paste; half a pound of powdered Spanish whiting and a pound of clear glue dissolved in warm water. Mix this well together and let the mixture stand for several days. Keep the wash thus prepared in a kettle or portable furnace, and when used put it on as hot as possible, with painters' or whitewash brushes."

Time to Dry Off Cows.—D. S. Dean, Rice Co., Minn.: Most farmers dry off their cows in time to give them a rest of from one to two months before calving. There are some, however, who milk up to the time of dropping the calves. The best authorities strongly condemn this practice, believing that it impairs the constitutional strength of both mother and calf, and lessens the subsequent production of both milk and butter. The farmer who delivers milk or supplies butter to private customers, needs about the same quantity of milk throughout the year, and plans to have his cows come in at all seasons. If he has a winter dairy, or sells milk or cream to a creamery, the cows will be dried off in the latter part of summer, when the prices for dairy products are low.

Olives for Oil and Pickles.—J. B. Daggett, San Bernardino Co., Cal.: When olives become red they contain as much oil as they will have a month later. The quality of the oil in the olives deteriorates the longer they are allowed to remain on the tree after they become of a fair degree of redness, as the olein thereafter diminishes and the stearin increases. Either for oil or for pickles, the olives should not remain on the trees until they are jet black.

Insect Powder on Cabbages.—Mrs. O. J. Markley, Lyon Co., Kan.: The time to apply insect powder to cabbages is just as soon as the young caterpillars begin to emerge from the eggs, that is, if you refer to the common green cabbage worm. But you may have some other kind of pest on your cabbages, such as the cabbage louse, or the Harlequin bug, upon which the Persian insect powder has little or no effect. There are many different kinds of insect powders, and fully as great a number of different insects which attack and feed upon cabbages, and an insecticide that will destroy one kind, may not have the least effect upon another. Kill the caterpillars.

SCIENCE IN FARMING.

Chinch-Bug Diseases.—Instead of there being but a single disease of the chinch bug that in times past has done great execution among the ranks of this injurious insect, there are at least three, and possibly four such diseases, according to L. Bruner and H. G. Barber of the Nebraska station (B. 34). All of these diseases were found by F. H. Snow, of Kansas University station (R. '91), in his successful artificial infection of chinch bugs in the grain fields. Two of these appeared last summer in Nebraska. The bacterial disease which, late in the summer, was very severe in the station breeding cages, also appeared in the fields, where it apparently did good work at times upon the enemy. This disease was not, however, so readily controlled as the white fungus. Whether the bacterial disease reached the fields with the infected bugs sent out, or whether it spontaneously appeared in the various regions, the Nebraska station is not prepared to state. Taking these different diseases of the chinch bug together, we have a pretty effective means for handling the pest when it becomes a plague, everything else being favorable. But, of course, we must remember that these chinch-bug diseases are due to the presence of certain plants within the bodies of the insects. As with other plants, we can hope to secure the best results only when the conditions for their growth are just right. Accordingly, many failures must be expected where the infection is distributed among the farmers who are not equipped with appliances such as are at hand in a laboratory. The chinch-bug diseases work best when the insects are most numerous. Coming into contact with one another is necessary in order to impart the diseases. Hence the diseases are valuable only when the bugs are injuriously numerous. At other times such precautions as will tend to keep the insects in check should be resorted to. These are principally what might be termed agricultural methods, such as clean farming, clearing up all rubbish in and about the edges of fields, and destroying all the wintering places in weedy hedgerows, ravines, old and neglected meadows, and in pastures. The natural enemies of the chinch bug should be encouraged, among which are the spotted lady beetles.

Cauliflowers.—An increased percentage of marketable heads was the result of handling cauliflower plants in pots during the early stages of growth at the Maine station, as reported by W. M. Munson (B. 10). Trimming plants at time of setting was of doubtful value. Early varieties, as a rule, proved more certain than the later sorts to produce a satisfactory crop. The general treatment of the cauliflower is similar to that required by the cabbage. Frequent and thorough cultivation is essential. That the heads may be well bleached, the outer leaves should be brought together and tied a few days before cutting. Unless taken directly from the garden, a cabbage or cauliflower is much improved if so placed that it can absorb water through its stalk for twelve to twenty-four hours before cooking. Any insects in a cauliflower head may be driven out by soaking it in salt water, upside down, for an hour. The earliest varieties grown at the station were: Burpee's Best Early, Dwarf Danish, Kronk's Perfection, and Livingston's Earliest; closely followed by Alabaster, Landreth's First, Long Island Beauty, and several strains of Snowball. All of these varieties produced a high percentage of marketable cauliflowers.

Spraying for Potato Blight.—The potato vines at the Vermont station were attacked last summer by two distinct blights, according to L. R. Jones (B. 40). The earlier potatoes were affected by the early blight, which spread slowly in July and August, causing premature death of vines, but no rot. The late blight attacked the later potatoes in August and September, spreading rapidly in warm, moist weather, and was followed by rot. Both these diseases were held in check by spraying, and the average yield of marketable tubers was thus nearly doubled. The compound of blue vitriol and lime, known as the Bordeaux mixture, was found to be the best when tested in comparison with many other fungicides. The two objectionable features of the Bordeaux mixture are that it is insoluble in water, and that it must be freshly prepared. Modified *Eau celeste* is the best substitute, as it is perfectly soluble in water, and can be kept indefinitely in concentrated form. It is a good fungicide, though not equal to Bordeaux mixture. A study of the development of White Star potatoes, planted May 20th, showed that the total yield was doubled during the first ten days of August, and was increased fourfold during the first twenty days. Over one-third of the yield of marketable size was formed in September. The growth continued until September 22d, and the tubers were not fully ripened until October. In four of the five preceding years, the blight had killed the potato tops in August, and in two of the years, before the middle of August. Potatoes planted about the middle of May were kept free from disease with less spraying than those planted earlier. The later potatoes also gave the larger yields. Medium planting gave the greatest increase. The best apparatus for spraying very large potato fields is a barrel force pump, carried on a two-wheeled cart. The addition of soap to the fungicides increased their usefulness on early potatoes, but seemed to lessen their influence on late varieties. Soap is valuable for checking the ravages of the flea beetles. The Colorado potato beetle may be killed by adding eight ounces of Paris green to fifty gallons of Bordeaux mixture. Potatoes planted in April were sprayed July 1st and 15th, August 1st, and again if needed. Potatoes planted in the first half of May were sprayed about July 15th, August 1st, 15th, and once more if necessary. Potatoes planted after May 15th were sprayed August 1st, 14th, 28th, and again if needed.

Soiling During Drouths.—Stock can be kept over short, dry periods by preparing well seeded plats, but long drouths must be anticipated by fodders which can be cut in succession. The soiling tests for this purpose at the Iowa station are reported by J. Wilson (B. 23) as showing that taking cows from an abundant pasture, keeping them confined in a barn and feeding them all they would eat of green oats and peas, resulted in an increased flow of milk of better quality. The peas and oats yielded 20,800 pounds per acre, second-cut clover weighed 14,400 pounds to the acre, rape 54,000 pounds, and sweet corn 36,000 pounds. Clover did not maintain the flow of milk or the quality, but the rape did worse, and the sweet corn made but little change from good pasture. Blue grass, peas and oats and clover make an extra quality of butter, while corn butter excels even these. The butter from rape became offensive a few days after it was made. The clover does not give quite as good results as the peas and oats, but it had only about two-thirds of their dry matter. Some of the cows were fed the green food in racks in the barnyard. The indications are that the greatest economy in soiling on the prairies will come from feeding green corn fodder, with some of the more highly nitrogenous foods, as green oats and peas, cowpeas, or the clovers.

Missouri Valley Grapes.—The most satisfactory grapes for general planting in the lower Missouri Valley, according to C. A. Keffer, of the Missouri station (B. 23) are, with few exceptions, those of the Labrusca species, of which the Concord may be taken as the type. A rich, warm, well-drained soil is best. Nearly all varieties should be planted at least eight feet apart. The appearance of the vineyard is much improved by planting in straight lines and at right angles. Strong one-year old vines are most desirable for planting. Thorough shallow cultivation is essential. Pulverizers, disc, and cut-away harrows are very satisfactory for this work. If the vines were planted less than eight feet apart, a harrow-tooth cultivator is the best implement to use. The pruning of the first two years must be done with reference to the system under which the vine is to be trained after it begins fruiting. During these two years the vine should become thoroughly established. The best time for the principal pruning is soon after the leaves drop in autumn, but pruning can be done at any time during the winter, when the vines are not frozen. In summer pruning, the lateral or stipulary branches are pinched in order to encourage the development of the fruit and the bearing wood for the succeeding year. The long arm, short spur system of training has usually proved the most satisfactory for the beginner, but the renewal systems are highly recommended. The most satisfactory way to bring a neglected vine into vigorous growth is to cut the vine off at the ground, and train the shoots that will spring from the stub, on one of the renewal systems. Bending the trunk of an old vine to the lowest wire of the trellis will usually induce new shoots to spring from the arch, or lower down, thus renewing the vine. The powdery mildew and the black rot were the chief diseases experienced, and both were controlled by spraying with Bordeaux mixture, five applications during the early part of the season usually being sufficient. Where only a few vines are grown, the rot can also be prevented by bagging the grapes as soon as the flowers have fallen, and the bunches will have a finer appearance when thus protected.

Varieties of Sugar Cane.—The field experiments with varieties of sugar cane at the Louisiana sugar station, extending through four years, are reported by W. C. Stubbs (B. 26) as indicating that the striped cane gives a slightly larger tonage with slightly less solids not sugar and fiber, and has a larger stalk. The purple cane is conspicuous for its increased powers of germination and multiplication, and to the latter fact may be ascribed the usually smaller stalk. In sucrose there is a wonderfully close agreement with but a slight difference in glucose. In fact, the two canes may be said to be almost identical, except that the purple is more reproductive, and that the striped has larger stalks. A greater amount of fiber and solids not sugar are found in the purple, and may, to some extent, modify its manipulation in the mill and vacuum pan. The reproductive power of the purple has exceeded that of the striped by 16 per cent. By actual count this has frequently risen as high as 20 per cent., and sometimes higher. At harvest, the purple stalks numbered six per cent. more than the striped. These results suggest the reason for the final survival of the purple in a field where originally both canes existed. On account of the sixteen per cent. more reproductive power, it will be but a short time before it will be master of a field.

Tomatoes in Cold Climates.—Under favorable circumstances, tomatoes will grow from seed and ripen fruit in twenty weeks. In colder climates the plants must be far enough advanced before setting them in the field, to allow the short summer to ripen the tomatoes. Experiments at the South Dakota station, by L. C. Corbett (B. 37), indicate that stocky seedlings, careful transplanting, and clean culture are the important requirements for rapid growth and success. There was not sufficient gain to warrant the additional expense and trouble of sowing tomato seeds before March, but for the bulk of the field crop they did not do well if started later than the middle of March. The crop was earlier from single-stem training, but the yield was thereby materially reduced. Seeds from green fruits gave larger tomatoes and a greater weight of fruit per plant, than seeds from sun-ripened, or from naturally-ripened tomatoes. Plants from cuttings were decidedly earlier and more productive during the early part of the season than normal or parent plants. The ripening of the fruit is retarded by pruning before setting in the field. Dwarf Champion, Early Ruby, and Early Advance, were the varieties that proved the best for South Dakota. It is best to cultivate tomatoes shallow, not more than two inches deep, and as often as once a week, to accelerate the growth and preserve the moisture of the soil.

Pasture for Swine.—In the feeding experiments at the Utah station by A. A. Mills (B. 28), those pigs which were allowed to roam at will over eighteen acres of good pasture, and were fed all the grain they would eat, made the most rapid growth, and apparently made the best use of food. Those pigs which were fed grass and grain in a small yard made a more rapid growth than those fed grain alone, and seemed to make a slightly better use of the food eaten. In both these sets of grass-fed pigs there was an increase in food consumed, apparently sufficient to account for the more rapid growth and the more economical use of food, so that green grass appears to be of greatest value as an appetizer. The pigs kept on grass alone made so slow a growth that it would have required two seasons to reach maturity, thus making the profits exceedingly doubtful. The pigs kept in a movable pen on pasture, ate within a few pounds as much grain as did those in a yard without grass, but did not make as good use of the grain. The experiments indicate that in order to have rapid and economical growth, exercise seems to be necessary for increasing the food consumption, and probably stimulating digestion.

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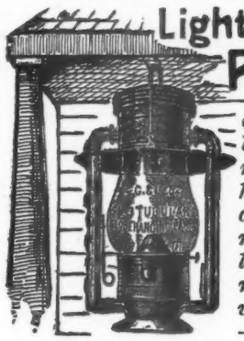

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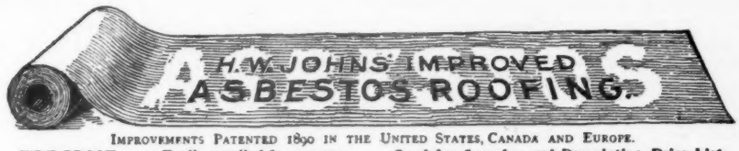

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MATTERS OF BUSINESS

Acreage and Condition of Crops.

The report of June 1st, consolidated from the returns of the correspondents of the Agricultural Department, makes the acreage of winter wheat sown, compared with that which was harvested last year, 99 per cent., being a decrease of one point. There is an increase of acreage, as compared with 1893, in but ten States, the principal part of which was made in the States of Kansas and Illinois.

Less Acres in Wheat.—The percentage of winter wheat acreage of the principal States are: Ohio 95, Michigan 85, Indiana 91, Illinois 122, Kansas 126, and California 103. The percentage of spring wheat area for the whole country is 87.8 per cent., being a reduction from last year's average of 12.2 points. The percentages of spring wheat acreage of the principal States are: Minnesota 87, Nebraska 81, South Dakota 85, North Dakota 90. The average percentage of acreage for both spring and winter wheat for the whole country is 95.3, making a total area in round numbers of 33,000,000 acres, against 34,630,000 acres last year, and 37,300,000 acres as the average for the previous four years, the latter being also the average number of acres in wheat annually during the ten years ending with 1889.

Condition of the Crop.—The condition of winter wheat has improved since last report a little less than two points, being 83.2 per cent., against 81.4 on May 1st. A similar gain was made in May, '93, but condition is now eight points better than then, but five points below the high average of June 1, '92, and 13 points below June 1, '91. It will be noted that condition is most seriously reduced in the two States of largest production—California and Kansas. Spring wheat condition averages 88 per cent., nearly two points better than a year ago, but four points below June, '92 or '91. These returns do not justify a hope for the average yield of 15½ bushels per acre, as in the banner crop of 1891, but indicate under 13 bushels per acre, or a total of below 425,000,000 bushels this season if no calamity befalls the spring wheat crop, against last year's crop, variously estimated at 396 to 450 millions, 516 millions in '92, 612 millions in '91, and an average for the past four years of 481, compared to 450 as the average for the ten years ended with 1889. It would not require much injury, however, to reduce the 1894 harvest to the smallest crop since '85—357,000,000 bushels.

The returns show a slight general increase of area planted, as compared with last year, due entirely to the increase in the States of Texas, Mississippi, and Arkansas. The average percentage is 100.6. The State percentage of acreage, as compared with the acreage of last year, are as follows: Virginia 97, North Carolina 96, South Carolina 99, Georgia 95, Florida 97, Alabama 99, Mississippi 102, Louisiana 98, Texas 107, Arkansas 107, Tennessee 96, Oklahoma and Indian Territories 120. It will be observed that condition has increased nearly three points over that of last year, and that the acreage has not materially changed.

Condition Compared with former years in States of principal production, and general average for the United States on June 1st, may be stated as follows, 100 representing every promise of a perfect crop:

Winter Wheat States.	June 1st, condition.				Y'ld per acre.		
	1894.	'93.	'92.	'91.	'93.	'92.	'91.
Ohio,	96	90	84	99	14.5	16.6	21.6
Michigan,	89	72	86	90	13.2	17.0	20.6
Indiana,	93	81	87	99	14.1	19.0	21.4
Illinois,	84	67	86	98	11.5	18.9	18.3
Missouri,	82	74	75	99	14.9	14.9	17.6
Kansas,	57	47	87	95	8.4	18.2	14.6
California,	60	72	98	97	13.3	15.4	13.8
General av.,	82	76	88	97	....	....	....
Spring Wheat.							
Wisconsin,	96	89	95	77	13.3	15.9	16.7
Minnesota,	99	88	90	89	9.6	12.2	19.9
Iowa,	90	95	91	95	11.5	14.6	17.4
Nebraska,	44	65	93	97	8.7	16.4	19.4
So. Dakota,	79	89	94	{96	8.5	14.4	21.2
No. Dakota,	97	92		{96	9.6	14.2	14.4
Washington,	89	92	96	96	20.3	18.9	21.0
Oregon,	96	97	97	..	17.5	17.5	24.7
General av.,	88	86	92	92.6	....	....	....
Average yield for United States, corrected,					11.4	13.4	15.3

Oats are being grown on apparently one per cent. fewer acres than last year, the national average being 99.1, and pointing to slightly more than the past four-year averages of 26,600,000 acres. Condition is returned at 87, against 89 in June last year, so that the yield may be considerably below the 640 million average of the past four years, at 33.2 bushels per acre.

The Barley Crop is growing on apparently 1½ per cent. fewer acres than last year, a decrease of nearly 50,000 acres. This makes the present breadth about 3,175,000 acres. Condition on June 1st was only 82.2, six points below last year's, and unless it improves the yield will average only about 20 bushels per acre against 21.7 last year, making a crop of only 65 million bushels against nearly 70 last year, and 78½ millions in 1889. We think the Department returns must be defective, for we are morally certain that more acres are under barley this year than the 3,220,000 reported by the census of 1889.

A Reduction of Five Per Cent. in Rye acreage from last year is also reported, but we can hardly believe this report, for rye has been one of the most profitable grains of late years. If it is correct, about 1,900,000 acres are devoted to this crop in the United States, or nearly 300,000 less than returned by the 1889 census. Condition is 93.2, nearly ten points better than last year, and indicating a fair, average crop.

The Heavy Decline in the Rice industry is reflected in an acreage nearly one-fourth less than last year, being returned at 76.4. This must throw the breadth back to approaching that of 1889, when the census returned 161,312 acres, Louisiana having over 85,000 acres, South Carolina just half as much, Georgia 18,000, and North Carolina 12,000 acres. The new tariff bill reduces the duty on purchased rice from one and one-fourth cents to one cent per pound; imports for ten months ended April 30, 1894, were over 95 million pounds against 118 millions in like period of the previous year. Imports for the year are likely to almost equal the domestic crop of 1889, which was 128,000,000 pounds.

Clover and Grass.—The area of clover is returned as 3.8 per cent. less than last year's, and condition on June 1st averages 87.8, or five points below last year, owing to drouth and cold. For the same reason the condition of pastures declined nearly six points during May, standing on June 1st at 92, or one and one-half points below last year's report. All this means rather less favorable conditions for the dairy and beef industries, with less prospect of a big surplus of butter and cheese.

Apples and Peaches were badly nipped by the cold wave while in blow. The peach crop, commercially considered, is practically a failure. The condition of apples is rather better than that of peaches. Conditions are high in Northern districts, but relate principally to bloom. No fruit is expected in the Piedmont and Ohio Valley districts, and but little in the Missouri belt. Prospects are brighter in the Mountain and Pacific States.

The New Cotton Crop Promises Well.

The returns of the correspondents of the Statistical Division of the Department of Agriculture on June 1st show that over the greater part of the cotton belt the weather conditions of the planting season have been only moderately favorable to seeding, germination and growth. The cold snap of the latter part of May, with continuous coolness since, has discouraged the growth of the plant in the States of Georgia, Alabama, the Carolinas, Mississippi, Louisiana and Tennessee. Drouth, in some sections, has been a retarding influence on both germination and development. Planting has been delayed to a considerable extent in some sections, and owing to dryness and cold, preventing germination in others, replanting has become necessary. Some abandonment of the crop and substitution of other crops is noted in not a few localities. There has been a general deficiency of rainfall in the greater part of the cotton belt during May, and rain was needed in Oklahoma, Arkansas, and in portions of Georgia, Alabama, Tennessee, Louisiana, Mississippi and Texas. The northeastern part of the belt seems to have had a sufficient precipitation.

The best conditions are reported in Texas, Arkansas, Louisiana and Mississippi, ranging from 91 to 97, while the lowest conditions are reported in Tennessee and Georgia, being 78 and 76 respectively. The average condition of the crop in the consolidation of reports is 88.3, as compared with 85.6 last year, and 85.9 in 1892. The State averages are as follows: Virginia 97, North Carolina 84, South Carolina 83, Georgia 76, Florida 92, Alabama 88, Mississippi 91, Louisiana 95, Texas 94, Arkansas 97, Tennessee 78, Oklahoma and Indian Territories 100.

Better Wheat Prospects.

Consumption is Overtaking Supply, and as set forth in the AMERICAN AGRICULTURIST for March the world's visible supply on July 1st is likely to be down to 150 million bushels compared to 152 millions on July 1st a year ago, 99 millions two years ago, and 83 million bushels on July 1st, '91. The June 1st visible was seven millions less than the year before, and distributed (according to *Bradstreet* and *Beerbohm*) as follows:

In millions of bushels.

	U. S. and Can. E. Rock's.	Pac. Coast, U. S.	U. K. and Con't. and afl't for Eur.	Grand Total Bus.
June 1, '94,	72	8.7	80	160
June 1, '93,	86	3.0	78	167
June 1, '92,	39	2.4	78	120
June 1, '91,	28	2.4	60	91
June 1, '90,	31	3.2	51	85
June 1, '89,	27	1.2	54	82

The Effect on Prices of this reduction in supplies below the quantity we had a year since remains to be seen. On July 1, 1893, the Chicago price of No. 2 spring wheat was 65 cents and Liverpool 72 cents. With a reduced area under wheat throughout the world, except in the Argentine, with no positive assurance that the '92-3 glut of wheat is to be repeated in the world's markets, are we not justified in looking for a restoration of wheat values to the marks of the 1892-3 season, the price at the farm in December '93, averaging 54 cents, and ranging from 40 to 60 cents in the wheat States, against a farm average of 63 cents in December '92.

The Speculative Markets do not reflect a tendency to advancing prices. Cash wheat at Chicago is hanging around 58 cents, and for July delivery about 60 cents, or five cents below the market of one year ago when the visible supply was considerably larger than now.

Personal, Commercial and Agricultural.

A Salary, with expenses paid, will come handy to anyone who is now out of employment, especially where no previous experience is required to get the position. If you want a position, read advertisement on Page 405, headed "A Chance to Make Money."

Fishing Among the Thousand Islands.—Fifty-six pages, beautifully illustrated, nine maps showing exact location of the fish; full information, with numerous accurate illustrations of tackle, etc., will be sent to any address free, post-paid, on receipt of five two-cent stamps, by George H. Daniels, General Passenger Agent, Grand Central Station, New York.

Five Hundred and Thirty-Eight Pages for Five Stamps.—A copy of "Health and Pleasure on America's Greatest Railroad," containing 538 pages, with over 300 illustrations and a description of more than 1,000 tours; finest book of its kind ever issued; will be sent to any address free, post-paid, on receipt of five two-cent stamps, by George H. Daniels, General Passenger Agent, Grand Central Station, New York.

Knives that Give Satisfaction.—This is what Mr. Jno. F. Riggs, Moundsville, W. Va., writes about the famous knives manufactured by Maher & Grosh, Toledo, Ohio: "The goods I ordered from you came to hand all right. Your knives are the best I ever got hold of. This was the third order I have given you for knives, and I will soon send for some axes too." Those desiring a first-class knife, at the lowest possible cost, are referred to our advertising columns.

Pocket Stove.—The value of local application of dry heat in rheumatic, neuralgic, and other affections of the human body is universally recognized, but, unfortunately, the application of heat by means of hot bricks, sand bags, flannels, etc., is not lasting, as the rapid change of the heat lessens their value materially. In the World Pocket Stove we have an application of dry heat which will retain its warmth unchanged in degree for hours. It is very highly spoken of by all who have used it.

Perfect Fencing.—Attention is called to change in advertisement of Poindexter Mfg. Co., Indianapolis, Ind. The perfection wire fencing is a new design, and for lawns, cemeteries or public parks, it cannot be excelled. Our readers in need of fencing or ensilage cutters, should write for full description of perfection wire fence, Lion fodder cutters and crushers, Ohio feed and ensilage cutters, the advertisement of which appears on another page.

Rewards for Discoveries.—The attention of worthy ingenious men and women is directed to the fact that the Franklin Institute of the State of Pennsylvania for the Promotion of the Mechanic Arts may grant, or recommend the grant of, certain medals for meritorious discoveries and inventions which contribute to the promotion of the arts and manufactures. Full directions as to the manner and form in which applications for the

MATTERS OF BUSINESS.

investigation of inventions and discoveries should properly be made will be sent to interested parties on application to William H. Wahl, Secretary, Franklin Institute, Philadelphia, Pa., U. S. A. The fund for these medals has been endowed by public-spirited citizens.

A Proud Distinction.—We are pleased to note that the Whitman Baling Presses came out of the Columbian Exposition and Field trials with the highest award possible to be granted on balers. The Whitman Presses received the highest awards in their three classes, namely: Belt or Steam Power, Full Circle and Hand Power Balers; also same awards on Press Grain Drill and on other entries, making a total of twenty awards.

Economy in Evaporating Fruit.—Evaporated apples are now among the high-priced products of the farm, and the stock on hand is unusually light, owing to short crops for several years. Waste in this direction should, therefore, be avoided, and every fruit grower will find it to his advantage to inform himself of the many good points of the American Fruit Evaporator, manufactured and sold by the American Manufacturing Co., Waynesboro, Pa., whose advertisment appears in the advertising pages of this number.

"A Hard Row to Hoe" is easily gotten over with the Hoover Potato Digger. Not one of the difficulties that confront a man with a hoe, or with the ordinary mechanical contrivance for plucking potatoes from the soil, enters into one's work with a Hoover. The most prominent points in its favor are: Vines and dirt are not caught up with the potatoes, it never misses one, adapts itself to the most uneven ground, and will stand being pulled by four horses. By applying to Hoover, Prout & Co., Avery, Ohio, readers of the AMERICAN AGRICULTURIST can secure some interesting reading matter regarding it.

Haying Tools.—The U. S. Wind Engine and Pump Company, of 115 Water Street, Batavia, Ill., have issued a catalogue of haying tools, the contents of which are of more than ordinary interest. It abounds with clear illustrations and descriptions of carriers, forks, cutters, etc., and will prove a valuable guide to any one about to buy any such outfit. This firm have been manufacturing such articles for twenty years and their equipments for producing the best are unequaled. They generously offer to send their catalogue free to all readers of the AMERICAN AGRICULTURIST.

Superior Horse Power Machinery.—We are pleased to note the fiftieth anniversary of the establishment of the well-known firm of A. W. Grays' Sons, Middletown Springs, Vt. Through invariable honest dealing with their customers combined with high inventive skill, and superior quality of all goods manufactured by them, they have easily gained a wide and enviable reputation for their goods. Their exhibit at the Columbian Fair presented a most attractive appearance and received the highest award. Messrs. A. W. Grays' Sons will send, free, an illustrated catalogue, giv-

(*Continued on Page* 409.)

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them all, leaving in their stead perfect health. To-day Clarence is stronger and weighs more than ever in his life. Hood's has saved our boy's life." MRS. VANIS EDDLEBLUTE, Roxbury, Ohio.

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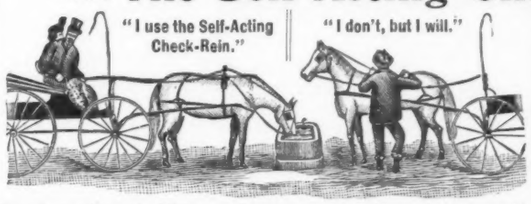

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Cough Mixture.—Abram Stein, Cass Co., Tex., wishes a cough compound for horses, sheep and cattle. The "northers" cause colds and coughs in his stock. A simple and effective cough remedy will be found in the following: Slippery elm bark, licorice root, flaxseed, powdered gentian, glauber salts, of each four ounces. Add to this an ounce of powdered muriate of ammonia and half a pound of brown sugar. Mix all the ingredients thoroughly and give in small bran mashes night and morning. If hay is given, dampen it, after shaking out the dust.

Colicky Cow.—Foster Sconer, Cortland Co., N. Y., recently moved and took with him a good cow that has, for three years, given a large quantity of milk, yielding more than a pound of butter daily, besides the milk consumed. She was driven over ten miles a day for three days, milked and fed regularly all the way. On arriving, she was fed too much and she had colic and fever, and has fallen off in her milk, though now she is apparently perfectly well. Give grass and ground oats with half a pint of linseed meal in two quarts of sweet wheat bran. All these foods should be gradually increased. Give the cow a good smart brushing every morning. Keep salt and water before her.

How to Manage a Yearling Stallion.—M. L. Oliver, Fairfield Co., S. C., has a very valuable stallion colt that he is anxious to give every advantage of judicious care. To keep such a colt in the stable would injure his feet, impair his muscular development, dwarf his growth and endanger his health. A clean boxstall, without floor, littered with moss, amply spread with rye straw at night, out of which should open to a paddock not less than twenty feet square, with a smooth board fence high enough for safety, but so that surrounding objects can be seen and so that he can be familiar with horses and other stock of the farm. Too close confinement is liable to excite vicious habits. Daily and gentle firm handling and grooming is essential to education and health They should be bridled and led, taught to go in the ring to a long rein, turned, backed, handled and harnessed, driven, and taught perfect obedience without unnecessary punishment. Bran, oats and clean hay, or good, fresh grass as often as may be, and all the good, fresh water he will drink. Salt should be in a little box in a corner out of the way, so that no injury can be received from it, and no manger or feed box should be left in the stall or paddock. The feed should be from the floor or ground, and only what will be cleanly eaten. Everything about the stall and paddock should be kept clean and sweet. Coarse sand, or sand and tanbark, or sand and sawdust (pine is preferable) without slivers or sticks, make a good, clean absorbent. Above all, perfect ventilation of the stall should be secured. There is too much danger in pasturing restless, roguish and playful young stallions. Be sure to secure the mastery, affection and obedience by firmness, gentle and kind handling, and by rewards of obedience by a bit of sugar, apple, or other tid-bit, such as horses like.

Bite of Enraged Animals.—B. L. Darwin, Clark Co., Ill.: Secretion of saliva of animal or man, under the influence of great excitement, furious passions, or deep and sudden grief, become poisonous, resulting in serious injury or sudden death when absorbed by a wound, or an abraded surface of the flesh of man or animals. The strong emotion of grief or joy may paralyze the human heart, producing sudden death. In man, the saliva from strong emotions of anger or terror have become so venomous as to cause death when applied to a wound. Dogs fighting have been known to die suddenly, not from dangerous or fatal wounds received, but from the poison of the suddenly changed saliva. Persons in separating fighting dogs, having been bitten, have died suddenly from the poisoned saliva of the dogs. The dog or dogs could not have had rabies, for the bite of the mad dog lies dormant in the system from three weeks to as many months before acting. May not the secretions of maddened insects also become poisonous, as persons stung by bees or hornets have been known to die suddenly? The fluids of the sting or bite of some insects are poisonous at all times, but may they not become especially venomous from being maddened? As the bites of spiders, serpents, vipers, rattlesnakes or of the cobra de capello are more fatal under excitement. The good effects of alcoholic stimulants in blood poisoning in puerperal fever, in abscesses, in rattlesnake bites, are well known to the profession and the public. In all cases of poisoning, as the poison is not at all dangerous when taken into the mouth, the removal by suction can almost always be instantly practiced, also the frequent dosing with whisky, the prevention of the return of blood to the heart by bands where possible, tightly drawn around the limbs between the wounds and the heart, and cauterizing the wound by cotton saturated with strong aqua ammonia, nitric acid or the hot iron. Cauterization must be used early and thoroughly to prove effectual. The tightly clasping the hand around the bite or sting immediately where possible until help arrives, is a valuable means to prevent absorption. As to the extent of the use of whisky must be governed by its intoxicating effects, it is desirable to secure this effect by small and repeated doses up to incipient stimulation.

Back-Sprung Knee.—Oliver Fitch, Jefferson Co., Ala., has a colt that bends the knee backward. This is weakness. There is nothing so effectual as hand-rubbing two or three times a day. Feed the mare liberally and keep her in good health. At night, at least, give her a feed of wheat bran and ground oats, in which a handful of whole flaxseed is put. Rub the fore legs from the chest to the hoofs, as the weaker muscles are in the shoulder and arm. If kept up at night in a box stall, bed with sawdust, as straw interferes with the movements and cut straw is slippery. Outdoor exercise in the sun and shade is a powerful tonic.

Hemorrhage—Bleeding from the Bowels.—Frank E. Poll, Waupaca Co., Wis.: Scours may set in early in a foal from the laxative nature of the mother's first milk, which nature has designed to remove the viscid matters accumulated in the bowels during gestation. The case of your colt was not scours, but hemorrhage from the bowels from the rupture of a blood vessel during struggles at foaling, or the fall at foaling from the standing position of the mare, which is the common attitude of mares, while with cows the lying position is usual. The creosote in the smoked ham must have caused coagulation and suppression of the hemorrhage, which is speedily fatal to newly-born animals.

Pounding Ankles and Knees.—J. T. Suffern, Orange Co., Vt., has a fast horse, but in slow work he pounds his ankles, and is apt to hit the knees in a spurt of speed. The remedy is simply perfect shoeing. Chalk the parts of the leg or ankle hit, and note on the shoe the chalk mark, and have that part of the shoe drawn in. If the hoofs are pared level and the shoes properly set, there may be no necessity of drawing in the shoe. A good plan will be to remove the shoes on the fore feet, and chalk the bruised parts, and level and pare away the edge of the hoof until no striking is done. Then set the shoes just within the edge. Proper shoeing often effects a cure.

Hidebound Horse.—A. Fonke, Shasta Co., Cal., has a fine saddle horse that is hidebound. The skin is hard, rough, dry and immovable on the body. The cause is generally bad keeping, indigestion, and neglect. In this case the account is too meager to diagnose torpidity of the liver, or any malignant disease. Give an aloes ball, or half a pound of glauber salts and half an ounce of powdered ginger in a large bran mash at night. Groom the horse thoroughly, and give a handful of whole flaxseed in each feed of oats and bran, plenty of good water, and daily outdoor exercise.

Appropriate Physic for Animals.—A. S. Tremont, Hancock Co., Me., asks what physic should be given a horse, a cow, a dog and a pig. For the horse, undoubtedly aloes is the best general cathartic. But it should always be combined with powdered ginger or gentian. Molasses in which linseed meal is mixed to a proper consistency, is the best medium for powdered aloes. A horse of a thousand pounds requires from two to six drams intimately mixed with the linseed meal and molasses, and rolled into an oblong ball about the length of the thumb, and given fasting at night, requiring ten to twelve hours to operate. Horses do not take oil so kindly as cattle, sheep, pigs or dogs; that is, it does not answer so well nor act so well upon the horse as upon the other animals named. Cattle require enormous doses of aloes in the fluid state, and it is an uncertain cathartic or physic then. A mild condition ball is made with a dram each of aloes and sulphate of iron, with half an ounce of ginger made into a ball with molasses and linseed meal, and given once daily, or every second or third day.

For cattle, a pound or pint of linseed oil is a fair dose, and may be given fasting early in the morning or late at night. The condition of the excretions will give the relative efficiency. Epsom salts or glauber salts may be given in solution, with ginger or gentian powder mixed or suspended in water and molasses, from a pound to a pound and a half to large cattle. Horses may have an ounce dissolved in the drinking water. For dogs and cats, castor oil and syrup of buckthorn; half an ounce of each forms a good laxative. The laxative effect of castor oil and syrup of buckthorn is equally good for young animals of all species. Common salt for cattle and sheep makes a useful purgative, acting like Glauber or Epsom salts. The equal combination of these salts with common salt, in two, three or four-ounce doses, dissolved in molasses and water, with powdered ginger mixed in it, makes a good, efficient laxative. In still smaller doses, daily, the mixture is a good tonic laxative.

Surfeit—Grass Feeding.—Con. Donnolly, Rutherford Co., N. C., has a yoke of working oxen that have always been well and hearty, able and willing to work every day. One stepped on a nail and was laid up for over two weeks, the well mate working behind a team. Both were fed cornmeal and bran alike. The working ox has as fine a coat as any horse, but the lame one's coat is coarse, rough and dandruffy. He seems dull. The idle ox is overfed. Reduce the ration and give half a pound of epsom salts in the drinking water every day and turn out to pasture.

Warbles—Sitfast.—John Stoltz, Logan Co., Ky., has two cows that have lumps on the back as large as the end of the finger. These tumors contain the larvæ of the gadfly. With a little patience and firm pressure after a small opening is made (where there is not already an opening) the worm will be removed and should be destroyed, as otherwise it passes into the fly form and will again deposit its eggs in the backs or sides of cattle. As soon as the fly is seen about the herd, smear their backs with crude carbolic acid, which will drive away the flies.

Weed—Lymphangitis.—Abel Truman, Rock Co., Minn., has a half-breed Percheron stallion that has been kept in a large box stall during the winter on very moderate feed. In the last of March the horse was fed too much on the start. He lost his appetite and life, and was confined in his bowels, made but little water, had a dry, rough coat, and began to have swelled hind legs, so tender that he could not even be brushed in these parts without great trouble. Wishing him to stand this season, he sent for a veterinarian, who gave physic, injections, aconite, ordered hot fomentations to hind legs, saltpeter in the drinking water, and fed only bran mashes and steeped hay. He called it inflammation of lymphatic glands. The horse got better, but took cold in a rain storm while going to a neighboring village, and has had slight return of same trouble, but not so bad. Was the treatment right? Certainly. Horses having been thus afflicted with lymphangitis, are very sensitive to cold and wet, and liable to subsequent attacks. You deserve credit for early sending for the doctor, but none for doubting the value of his services, after proving them valuable by restoring the horse to comparative health. If you do not follow the veterinarian's advice you may have an elephant on your hands in the shape of an elephantine hind leg of your horse.

Poll-Evil—Fistula.—A subscriber, Lee Co., Ill., has a horse that has a sore on the back part of the head. It runs matter and soils everything it touches. The horse has always been a stumbler so that a tight check-rein had to be used to prevent the habit. The tight-bearing rein is probably the cause. Send for a veterinarian at once and he will freely open the abscess. It will be fortunate if deep sinuses have not been already formed, or ulceration of the bone occurred. If the horse is affected with poll-evil the trouble will be found deep seated, and the services of the veterinarian needed for this serious and lasting disease.

MATTERS OF BUSINESS.

(*Continued from Page* 407.)

ing full particulars and detailed information as to the construction and operation of their machines, to any person mentioning AMERICAN AGRICULTURIST.

144 Chicks from 150 Eggs.—A remarkably successful hatch is reported by Louis Lander, Erie, Pa., as follows: Twenty-five days ago I put 150 eggs into my 100-egg capacity "Old Reliable" purchased of the "Reliable" Incubator & Brooder Co., Quincy, Ill., by removing the turning rack, and started it up. I turned the eggs by hand and tested them on the seventh day, and to my surprise found all the eggs good but three or four. I was looking for a good hatch, but the result was better than I ever expected. I got 144 chicks from this hatch in my 100-size incubator. Now, what do you think of that? Does it not beat the best record?

A Merited Award.—The official Columbian award given to the Keystone Mfg. Co., Sterling, Ill., for their "Keystone" Hay Loader is of special interest to all farmers who desire to expedite the work of haying as much as possible. "At a practical field trial this machine worked admirably, taking up its load from either windrow or swath and loading handily and rapidly, making a load of one ton and upwards in ten minutes, the hay averaging two and a half tons per acre. It is of simple design and excellent construction. Its practical operation warrants the highest commendation for economy and effectiveness."

Songs of Praise from the Meadows.—This is the title of a very neat and interesting book issued by Rock Island Plow Co., Rock Island, Ill. In it are given full descriptions and complete illustrations of the Rock Island Hay Rake and Loader of which 25,000 have been sold during the past three years, which in itself serves to prove its popularity and excellence. One of the principal differences in the Rock Island and other Loaders pointed out by its makers, as a reason for its great success, is the slow movement of its operating parts, and the long stroke upon the ground of its rakes, which much resembles the handling of a hand rake by a powerful man in raking hay; while other Loaders give a circular movement to the rakes only, and must run more than three times as fast to do the same work, with a consequent increase of draft and wear of operating parts.

Superior Threshing Machinery.—As the season for threshing approaches, we desire to call the attention of our readers who are contemplating the purchase of a threshing machine, or a horse-power, to the justly-celebrated Fearless machine made by that old and thoroughly reliable manufacturer, Minard Harder, Cobleskill, New York, who for more than a third of a century has been and still is the proprietor and manager of the Empire Agricultural Works. As his principle has always been never to turn out anything but first-class goods, we have no hesitation in saying that we believe designing purchasers will be the gainers by consulting Mr. Harder, and securing from him the latest edition of his finely-illustrated catalogue, which is sent free to readers of the AMERICAN AGRICULTURIST, and which describes the various machines of his manufacture so fully, and in such a clear, plain and distinct manner that the ordinary reader cannot fail to understand the construction and operation of the same, even without a personal inspection.

The Farmers' Handy Wagon.—This new wagon fills an important place upon every farm. It is a low-down handy wagon, with solid wheels and six-inch tire. The bolsters which extend over the wheels are only thirty inches from the ground, and admit of using a platform seven feet wide by sixteen feet in length, for a very large load of products and tools. The construction of the wagon is simple and strong, while the large skein, wide tire and up draft make it very easy hauling, but, best of all, is the fact that while it weighs less and will cary three times the load of the ordinary two-horse wagon and will last much longer, (the wheels are guaranteed by an old and responsible company, for five years against breakage) yet it costs only one-half as much as the ordinary farm wagon. We feel justified in calling the attention of our readers to the advertisement of the Farmers' Handy Wagon Co., and advise them to send for one of the company's books, which gives many attractive farm scenes, and illustrates the many uses in which this wagon has advantages over the ordinary wagon.

Caloric Pumping Engines.—It is now nearly fifty years since Ericsson first built a small caloric engine, as he called it, and set it at the work of raising water for railroad and domestic purposes, and from that day to this the hot-air engine has been pumping water in the most economical and satisfactory manner. The hot-air engine has passed through a great many modifications and improvements, and at the present time, the DeLamater-Rider, which is generally used for the larger and heavier work, and the DeLamater-Ericsson adapted to both light and heavy work, are the forms most in favor. The latter is used with gas, coal, wood and kerosene burners. For economy and ease of handling these machines are unexcelled, and their use on farms especially is rapidly increasing. Any reader of the AMERICAN AGRICULTURIST desiring further information about these useful machines should write to the DeLamater Iron Works, 87 South Fifth Avenue, New York.

Run Down by a Loaded Handcar.

D. T. Allyn Meets With a Serious Accident.

HIS ESCAPE, SICKNESS AND RECOVERY, PLUCK, PARALYSIS—A RAILROAD'S INGRATITUDE.

(*From the Wallace, Neb., Herald.*)

Last summer Mr. D. T. Allyn of this place, worked for the B. & M. R. R., as a section hand, on the section extending east from Tecumseh, the county seat of Johnson County, Nebraska. On the 2d day of July he met with an accident that nearly cost him his life. He and five other men were working a handcar in front of which was a push car. Mr. Allyn was standing on the front part of the car, with his back towards the direction in which the car was being run. Just as the two cars came together, the foreman ordered him to step from the car on which they were riding on to the push car, and at the same time signaled another of the men to apply the brake, which slackened their speed enough to cause a gap of a few feet between the cars.

In stepping back to comply with the order, he fell upon his back in the middle of the railroad track, and the car, with its load of five men, tools and water keg, in all weighing fully a ton, passed over him. A rod on the under side of the car caught his feet and doubled him up so that his feet struck his face. As he rolled over, the bull-wheel struck his back and inflicted the injury that came so near proving fatal. The car was raised from the rails and thrown off the track.

He was carried to town and Dr. Snyder, the B. & M. R. R. surgeon at Tecumseh, was summoned. Afterwards Dr. C. C. Gafford, Dr. Yoden and Dr. Waters, all of Wymore, Neb., were called in consultation, but they could afford no relief. About the 1st of October he became paralyzed from his waist down. The sense of feeling entirely left his legs, which became drawn one across the other. Dr. Livingston, of Plattsmouth, Neb., the head physician of the B. & M. R. R. system was summoned to treat the case, but finally informed his patient that he could not live to see July, 1893. He had not the means to pay the expenses of a law suit against the railroad company, but the company's attorneys very willingly compromised the claim for damages by paying him $2,000. His condition continued to grow worse, the excruciating pain in his back never ceasing, until upon the recommendation and by the request of a lady friend, Mrs. W. G. Swan, of Tecumseh, Neb., he began taking Pink Pills for Pale People. To the *Herald* reporter he said, "I had no more faith in them than I would have had in eating a handful of dirt." He commenced taking the pills on the 2d day of February, taking one after each meal, and in ten days' time, to his surprise and intense delight, the pain began to leave him. For seven months he had suffered continuously, and his joy when relief came can be imagined but not described. He continued taking the Pink Pills until the fore part of May. About the middle of March he could go about his ordinary work without any inconvenience. He considers himself entirely cured and feels as well as he ever did, except that his back is not as strong as it was before he was hurt.

This spring he moved on to a farm twelve miles southwest of Wallace, where he has planted a good crop of corn and is doing all his work without any hired help. Should anyone doubt the statements herein made, they are invited to see him personally or write to him, and address him at Wallace, Neb. He is thankful for what Pink Pills have done for him, and is willing to go to some trouble to let others know of their wonderful curative properties.

Dr. Williams' Pink Pills, it seems, contain in a condensed form all the elements necessary to give new life and richness to the blood, and restore shattered nerves. They are an unfailing specific for such diseases as locomotor ataxia, partial paralysis, St. Vitus' dance, sciatica, neuralgia, rheumatism, nervous headache, the after effects of the grippe, palpitation of the heart, pale and sallow complexions, that tired feeling resulting from nervous prostration; all diseases resulting from vitiated humors in the blood, such as scrofula, chronic erysipelas, etc. They are also a specific for troubles peculiar to females, such as suppressions, irregularities, and all forms of weakness. They build up the blood and restore the glow of health to pale or sallow cheeks. In men they effect a radical cure in all cases arising from mental worry, overwork, or excesses of whatever nature.

These pills are manufactured by the Dr. Williams' Medicine Company, Schenectady, N. Y., and Brockville, Ont., and are sold in boxes at 50 cents a box, or six boxes for $2.50, and are never sold in bulk.

RUPTURE A positive radical cure at home. (Sealed) Book giving full particulars sent FREE. Address
DR. W. S. RICE, Box 444 Smithville, Jefferson Co. N.Y.

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DEAFNESS
and Head Noises relieved by using
WILSON'S COMMON SENSE
EAR DRUM.
New scientific invention, entirely different in construction from all other devices. Assist the deaf when all other devices fail, and where medical skill has given no relief. They are safe, comfortable and invisible; have no wire or string attachment. Write for pamphlet. *Mention this paper.*
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Anywhere to anyone | $25 Bicycle for $12.50
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MY WIFE CANNOT SEE HOW YOU DO IT AND PAY FREIGHT.
$14 Buys our 2 drawer walnut or oak Improved High Arm Singer sewing machine finely finished, nickel plated, adapted to light and heavy work; guaranteed for 10 Years; with Automatic Bobbin Winder, Self-Threading Cylinder Shuttle, Self-Setting Needle and a complete set of Steel Attachments; shipped any where on 30 Day's Trial. No money required in advance. 75,000 now in use. World's Fair Medal awarded machine and attachments. Buy from factory and save dealer's and agent's profits. Cut This Out and send to-day for machine or large, free FREE catalogue, testimonials and Glimpses of the World's Fair.
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Fertilizers are unprofitable,
Unless they contain sufficient Potash.
Complete fertilizers should contain at least 6% of Potash.
Fertilizers for Potatoes, Tobacco, Fruits and Vegetables should contain from 10 to 15% of Potash. Farmers should use fertilizers containing enough Potash or apply potash salts, such as Muriate of Potash, Sulphate of Potash and Kainit. For information and pamphlets, address
German Kali Works, 93 Nassau St., N. Y. City.

Deafness. The newest and absolutely the best in this line is the **Carbophone.** Is working on the principle of telephone and microphone. Will overcome any kind of deafness, if the ear is not stopped with catarrh matter; if such is the case our **Vaporator** will restore the ear to its natural condition.
ELECTRICAL & CARBOPHONE CO.,
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LARGE STRAWBERRIES.

A fine crop next season from
POT GROWN PLANTS
That are now ready—our handsome descriptive Illustrated List of 50 varieties Strawberries; 15 varieties of Celery, mailed free. Address
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BOOKS FOR FARMERS!
STOCK BREEDERS, GARDENERS,
FLORISTS, FRUIT GROWERS,
And all others interested in **Rural Life.** We supply any book published on the above subjects. **CATALOGUE** of **600** standard works **sent free.**
ORANGE JUDD COMPANY, New York.

TOPICS OF THE TIMES.

Farmers' National Congress.—Each State and Territory is entitled to as many delegates in the Farmers' National Congress, as it has national senators and congressmen, and each State bureau of agriculture is entitled to a delegate, all to be voluntarily appointed by the State governor. The fourteenth annual Congress will convene at Parkersburg, West Virginia, the first week in October. All social and economical questions affecting the farmer will be discussed, in a strictly non-political manner. This feature is so closely observed, and so careful is the Congress about this matter, that it is one of its unwritten laws that no one shall use his connection, official or otherwise, with the Congress to advance his political fortunes in any way. It has recently taken a strong stand for free mail delivery in the rural districts. The national character of its programme is shown by addresses from California, Texas, Maine and Georgia, and other States. The Congress does not meet for pleasure, but for business. Every farmer would be greatly edified by hearing its discussion of highways, waterways and railways, of taxation, mail delivery, option trading and farmers' organization. The Secretary is John M. Stahl, Quincy, Ill. Those highly interested in the progress of agriculture are attending these Congresses in increasing numbers from all parts of the country, and much good will undoubtedly result.

Sugar Bounty Payments.—The impetus given to the sugar production of the United State by the present sugar bounty has been widespread, as is shown by the following list of payments, as reported by the Secretary of the Treasury. Total bounty paid for beet sugar produced in California, Nebraska and Utah in 1891 and 1892, $240,098.56; in 1892-93, $531,363.81; and up to March 1st of current year, $610,935.59. Total bounty paid for sorghum sugar produced in Kansas and Minnesota in 1891-92, $22,197.28; in 1892-93, $19,817; and up to March 1st of current year, $16,929. Total bounty paid for cane sugar produced in Louisiana, in 1891-92, $6,882,589.83; in 1892-93, $8,584,865.54; and up to March 1st, 1894, $1,657,108. Total bounty paid for cane sugar produced in Mississippi, in 1891-92, $176,301.73; in 1892-93, $174,943.90; and to March 1st of current year, $113,193.24. Total bounty paid for cane sugar produced in Florida, in 1891-92, $18,233.79; in 1892-93, $3,960.45. Grand total of bounties paid for cane sugars in 1891-92, $7,077,316; in 1892-93, $8,763,830; and up to March 1st, 1894, $1,770,301. Total bounty paid for maple sugar, in 1891-92, $2,465; in 1892-93, $60,119, and up to March 1st, of current year, $115,434. The grand total of all bounties paid up to March 1st, 1894, for all kinds of sugar produced in the United States, was $19,230,806.30. These are large sums of money, and their effect upon the future of the American sugar industry, will be eagerly and hopefully watched.

Low Prices for Wool and Butter.—E. E. Rockwood, Genesee Co., Mich., writes us: "Wool sells for from ten to sixteen cents per pound. The latter figure is for the very best coarse wool. The sheep and wool industry was once one of our leading lines of farming; but very few sheep will be kept next year. No one cares to keep them at a loss, hoping that the price may come up. Several farmers here have kept over their last year's clip, and will now sell it for less than it would have brought then. When a sheep's fleece will not bring a dollar, there is no profit; indeed, there is a loss. Lambs have, until the last year or two, brought a good price, but they have fallen off until there is no money in raising them. Dairy products, too, were never so low. Ten cents a pound for butter is poor encouragement to the farmer's wife to make it 'gilt-edge.'"

Gift Berry Crates for the New York Market.—Some years ago every form of package in which farm or garden produce was sent to the New York market, was returned to the shipper to be refilled and reshipped, but this is no longer done except in the case of berry crates. Last year a vote not to return berry crates was carried in the New York Fruit and Produce Trade Association, but this summer no official action has been taken and everything is left to the individual judgment of the commission men. It is customary for the city buyer to leave a deposit of fifty cents for the return of each crate to the commission men. It is very difficult, however, for the out-of-town merchant to get his customers to leave a deposit, and if the crates are not returned, all profit on the purchase is lost, as the profit on a crate of berries does not average more than one cent per quart. Hence those commission men who sell the crate with the berries are given the preference by buyers. Growers, however, wish the crates sent back to be refilled, and will ship more goods to those dealers who will agree to return crates. A large number of fruit growers to the north of Norfolk, Va., are too close run to buy new crates this summer, and have very few crates left over from last year. The greater expense prevents the return of many crates to points south of Norfolk. This summer many of the commission men are not returning crates, but are charging one-half a cent more per quart for fruit, and are deducting a half cent per quart in remitting returns to shippers. There is much diversity of both opinion and practice, however, on this subject, which is of no little concern to fruit growers.

Ammoniacal Solution of Copper Carbonate.—Experiments in making the ammoniacal carbonate of copper spraying solution, in the chemical laboratory of the Delaware station, by C. L. Penny (B. 22) have led to the following practical directions: To one volume of the strong ammonia of commerce (26° Beaumé) add from seven to eight volumes of water. Then add copper carbonate—best in successive quantities—until a large portion remains undissolved. The mixture should be vigorously agitated during the dissolving, and finally allowed to settle. The clear liquid should then be poured off from the undissolved salt. A second portion should then be made by treating the residue of the former lot with more ammonia, diluted as before, then with the addition of fresh copper carbonate, in every case with vigorous stirring, or agitation. The method of making in successive lots will result in a richer solution of copper. The solution may be thus made in any suitable wooden or stoneware vessel. A still better way is to place in a large jar an inverted crock, or other suitable shelf, and on this put the copper carbonate, so that it shall be at the surface of the ammonia when that is poured in. After adding the diluted ammonia, the whole should be covered and allowed to stand some time, as over night, and then most of the undissolved copper salt may be easily lifted out of the solution. Instead of the shelf, a suitable receptacle may be used, as a fine wire sieve. The jar will need only a loose cover,

(*Continued on Page* 411.)

THE SCHOOL BOY

—is often a sufferer from headache. The seat of sick headache is not in the brain, for if you regulate the stomach and bowels you'll cure it. Too much brain-work and brain-tire brings on a rush of blood to the head with headache, dizziness or "nose bleed."

MISS WOLFE.

Miss BERTHA WOLFE, of *Dayton, Cattaraugus Co., N. Y.*, writes: "I suffered from loss of appetite, constipation, neuralgia, and great weakness, and had terrible attacks of sick headache very frequently; also nose bleed. My health was so poor that I was not able to go to school for two years. I took Dr. Pierce's Pleasant Pellets and 'Golden Medical Discovery,' and in a short time I was strong and well. Many friends are taking your medicines, seeing what they have done for me."

HARTSHORN'S SELF-ACTING SHADE ROLLERS

NOTICE NAME THUS Stewart Hartshorn ON LABEL AND GET THE GENUINE HARTSHORN

CHOPPERS ATTENTION!

ASK FOR THIS AXE. USE NO OTHER.

Wood-choppers, try the

Kelly Perfect Axe

It will cut more wood than any other axe.

The scoop in the blade keeps it from sticking in the wood, and makes it cut deeper than any other axe. Ask your dealer for it. Send us his name if he don't keep it. It is the Anti-Trust Axe.

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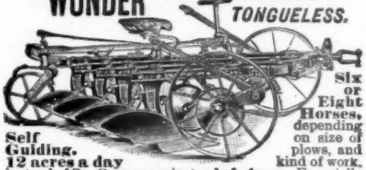
SOLID COMFORT "WONDER" ON WHEELS"

THE TONGUELESS.



Six or Eight Horses, depending on size of plows, and kind of work.

Self Guiding. 12 acres a day instead of 3. One man instead of four. Especially adapted to traction engine. Uses wheel landside which resists pressure of four furrows. No bottom or side friction. Weight of furrows, frame and plowman carried on three greased spindles. Draft reduced to lowest possible limit. Foot brake prevents Gang running on team. Lever and turning device within easy reach. Easier Driving, Straighter Furrows, and LIGHTER DRAFT than any Gang in America. Adjustable frame—can be narrowed or widened at will. Made with stubble, sod and stubble, or breaker bottoms. 10 or 12 inch cut.

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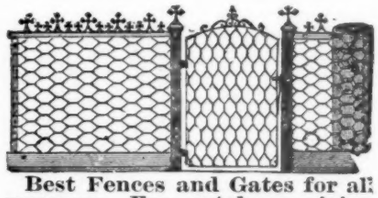

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Diagram Showing Motion of Rakes on Rock Island, 1,700 Strokes per Mile.

HOW Other Loaders Do It. OVER 5,000 STROKES PER MILE. (Must wear the Machines?? and break the hay. ??)

YOU GUIDE THE TEAM

The Loader Does The Rest.

Dispenses with hired help and hard work, takes the place of a rake and does the work of four men and a horse besides.

In showery weather will frequently pay for itself with one days use and no one gets "tired out." An interesting book entitled

"Songs of Praise from The Meadows,"

Written by a thousand farmers who have used them and know whereof they speak, tells all about it. Sent free.

THE ROCK ISLAND PLOW CO., Mention this paper. ROCK ISLAND, ILL.

TOPICS OF THE TIMES.

(*Continued from Page* 410.)

as the loss of ammonia will be slight at that degree of solution. In all cases the clear solution thus obtained, containing from three to four per cent. of ammonia gas, must be diluted, in no case less than thirteen fold; better, for the safety of the plant, twenty fold or more. Those directions which recommend so much ammonia to be used as may be necessary to dissolve the copper salt, and then to dilute to a given number of gallons, are not only not economical, but absolutely dangerous when applied to the trees, as it is uncertain how much ammonia has been used. Strong ammonia should be diluted at least one hundred fold.

A Sign of Better Times.—When everybody is hoping for the return of better times, each straw that shows the wind to be blowing from that quarter is worthy of special notice. Our advertisers, the Charles E. Hires Company of Philadelphia, report that the sales of Hires' Rootbeer, so far this season, are very much in excess of the same period last year. When it is remembered that their annual sales have before this reached the enormous total of 2,880,278 packages, which equals more than a gallon for every family in the country, it would seem, at first thought, that there is little room for further growth. Thirst for it, however, seems to be universal, as this year's report shows a very large gain, indicating that ere long the person who does not drink Hires' Rootbeer will be somewhat of a curiosity. No temperance beverage has ever anywhere nearly approached Hires' Rootbeer in popularity. Its wonderful success can be accounted for only on the ground that it is just what the manufacturers claim—an honest extract of nature's most healthful roots, which slakes thirst, improves health, and pleases every member of the family. Its remarkable sale certainly proves that millions enjoy Hires' Rootbeer.

The Perfected Galloway Knapsack Sprayer.—One of the best, all-around sprayers, and one that commends itself highly for efficiency, economy and durability is the Perfected Galloway Knapsack Sprayer, manufactured by The Deming Company, of Salem, Ohio. Nothing could be more complete in detail than one of these outfits, or constructed on better lines for spraying grapevines, potato plants, and small orchards, where the work is necessarily done by one man. The pump can be operated by either the right or left hand and is so constructed that all leakages from the stuffing box will drip back into the tank. The tank is of copper with brass pump and indestructible valves, making it one of the most perfect spraying outfits ever introduced. The Galloway Sprayer is extensively used by grape growers, fruit growers, florists and gardeners in every part of the country who have nothing but words of praise to say of its operation. Those who contemplate purchasing a sprayer will do well to send to The Deming Company for their catalogue. They send it without charge to readers of the AMERICAN AGRICULTURIST.

Chicago Butter.—The Produce Exchange of Chicago has adopted the following classification for butter: Extras shall consist of the highest grade of butter produced during the season when made. Flavor must be quick, fine, fresh and clean if of fresh make, and good, sweet and clean if held. Body must be firm and solid, with a perfect grain or texture, free from salviness. Color must be uniform, neither too light nor too high. Salt must be well dissolved, thoroughly worked in, not too high, or too light salted. Package must be good and sound, as required in classification. Firsts shall be a grade just below extras, lacking somewhat in flavor, which, however, must be good, sweet and clean; all other requirements being the same as in extras, excepting style of package. Seconds shall consist of a grade just below firsts. Flavor must be fairly good and sweet. Body must be sound and smooth boring. Color is to be fairly good, although it may be somewhat irregular. Salt may be irregular, high or light salted, and the package is to be the same as required in firsts. Thirds shall consist of butter below seconds, defective in flavor, showing strong tops or sides, not smooth boring; mixed or streaked in color, irregular salting and miscellaneous packages. Grease butter shall consist of all grades of poor and rancid stock below thirds. The packages to be used are: Creamery tubs, hardwood, 55 to 60 pounds. For extras shall be standard 5-hoop, white ash, 56-pound tubs. Imitation creamery tubs 30 to 60 pounds. Dairy tubs of varying sizes. Ladle tubs of varying sizes. Packing stock, any style or size of package. Roll, any style or size of package. Grease, any style or size of package.

The Price of Milk.—The hard times are causing city dwellers to buy less milk, while the recent rains have stimulated such luxuriant pasture that the cows fill the milk pails to overflowing. In consequence, the wholesale price of milk in the Greater New York City has fallen to one and three-fourths cents per quart. This is the price fixed by the New York Milk Exchange, which is controlled by about a half dozen dealers, and forms the standard to which all other prices conform. It has never before gone below two cents. The prices generally range from 3¼ cents in January to two cents in June. From last September to last February, the price was uniformly three cents, the lowest winter on record. The retail prices to the three million consumers in the American metropolis vary from six to ten cents per quart, according to freshness and quality, for the nearly three hundred million quarts delivered and used each year. Every night for the last two years, the railroads have carried to that city, about twenty thousand cans of forty quarts each. The farmer hauls his milk at night, over rough country roads to towns, selling to a shipper at a lower rate than the wholesale price. The shipper, who is often a creamery man, often separates some of the cream from the milk, and sells the milk at the one and three-fourth cents. The farmers who sell to the condensed milk factories in their midst realize higher prices. In no other city is the wholesale price of milk so low. In Philadelphia, it is always a cent higher. The milk business is doubtless overdone, but there is room for much active work by a New York Milk Producer's Union.

Home Dairy Tests for Ayrshires.—The Ayrshire Breeders' Association believes the success of the breed in the future demands a cow that shall be not only a large milker and an economical producer, but shall also have the ability to produce a large percentage of butter fat and total solids. Therefore, to encourage the testing of Ayrshire cows, and to influence its selection for breeding for butter qualities, the association offers fifty dollars in premiums, divided as follows: Twenty-five dollars for the first, $15 for the second, and $10 for the third. These premiums shall be awarded to herds of ten cows producing the largest average record for two consecutive days, as determined by the scale of points herein mentioned. It is not necessary for this test that cows should be fresh in milk. No premium will be paid to a herd testing less than thirteen per cent. total solids. Competent agents will make the tests at the farms of the competitors.

Arrangements have been made with experiment stations to perform the work in their several States where the competing herds may be located, and send the result in duplicate to Secretary C. M. Winslow, Brandon, Vt., and to the competitors. The agent will visit the farm of each competitor at a mutually convenient time, as soon as possible after the entries close. He will see the cows milked clean at least twelve hours previous to the beginning of the test, and will weigh and test the milk of each cow at each milking during the two days of the test. The tests will be made by the Babcock tester and the Quevenne lactometer. All entries must be made before July 1, 1894, to the secretary. Any breeder of Ayrshires may enter a herd of ten cows, which shall, at the time of entry, stand on the books of the association as owned by him. He shall, in making the entry, fill out a blank furnished by the secretary, giving name and number of each cow, her age and weight, the number of calves she has produced, the date of birth of last calf, and date of last service by bull since last calf was dropped. A statement as accurate as possible, is requested, of the method of feeding and care for at least two weeks previous to test, and during the test the kind and weight of food consumed by the cows is to be recorded.

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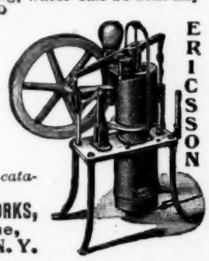

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The New United States Entomologist.

The retirement of Dr. C.V.Riley from the position of Entomologist for the Department of Agriculture, after a long period of distinguished service, has been followed by the appointment as entomologist of Mr. L. O. Howard, of New York. Mr. Howard was graduated from Cornell in 1877, as B. Sc. After one year of post-graduate work, Mr. Howard received the degree of M. Sc., and was soon after appointed assistant in the Division of Entomology in the U. S. Department of Agriculture. In 1886, when the place of first assistant to the Entomologist was provided by statutory enactment, Mr. Howard received the appointment, and has filled that place ever since. Mr. Howard has been joint editor with Dr. Riley of the periodical publication issued by the Division of Entomology, Insect Life, since that publication was started. Among the contributions to the publications of the department of which he is the author, are Bulletin No. 5, Descriptions of North American Chalcididæ; also of Bulletin 17, the Chinch Bug. He contributed to the Annual Report of 1887 a monograph on the Coddling Moth, and to that of 1888 one on the Plum Curculio.

Mr. Howard is the author of numerous contributions to the Proceedings of the National Museum and the Entomological Society of Washington, the total number of titles under his authorship being about 300. He is a member of numerous scientific societies, being president of the International Association of Economic Entomologists, secretary of the Zoölogical Section of the Association for the Advancement of Science, and has been secretary and is a member of the Council of the Biological Society of Washington, and has also been president of the Entomological Society of Washington. Mr. Howard was the entomological contributor to the Century and the Standard Dictionaries, and is the author of a chapter in the Standard Natural History. The vacancy created by his promotion as entomologist has been filled by the appointment as first assistant of Mr. C. L. Marlatt, of Kansas.

Mr. Marlatt was graduated from the Kansas Agricultural College, B. Sc. in 1884, and in 1886 received the degree of M. Sc. for special work in entomology. He served for two years thereafter as assistant in the department of horticulture of the Kansas Experiment Station in charge of the entomological work. In 1889 Mr. Marlatt was appointed assistant in the Division of Entomology in the Department of Agriculture. Mr. Marlatt is a member of various scientific societies, and is now secretary of the Entomological Club of the American Association for the Advancement of Science, and vice-president of the Entomological Society of Washington, and was, for a number of years, secretary of the latter society.

Shade for Rhododendrons.—F. Miner, Passaic Co., N. J.: Rhododendons, and other broad leaved evergreen shrubs and trees succeed best when planted in a half-shady position. Some of the species may withstand the hot sun very fairly, provided they have plenty of moisture at the roots, but the foliage will not have that rich, glossy and healthy color seen on plants growing in half shade. Give the plants the morning sun, after midday shade will be beneficial in both summer and winter. If you will go into our forests and notice where the kalmias, rhododendons and hollies thrive best, you will find that they are shaded more or less. Plants that are half burned up in summer cannot withstand the cold of winter; consequently there are many plants which would be perfectly hardy in our climate if they were given a fair chance for growth and healthy development in summer.

The May Agriculturist just to hand, and the amount of matter in it I have not seen for the twenty years that I have consulted its pages. It is so interesting and valuable that this number alone is worth more than the price of a year's subscription. Send me a few copies of the May number, and I will place them in the hands of some who may become subscribers.

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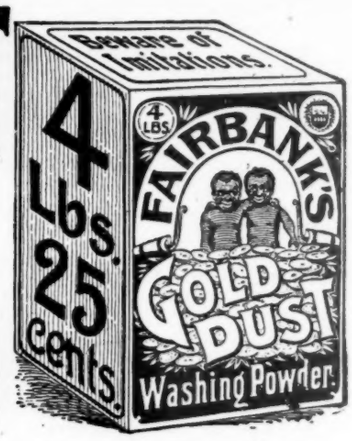

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A New Method of Road Building.

STEEL RAILS FOR BOTH WAGONS AND ELECTRIC CARS CHEAPER AND BETTER THAN STONE ROADS —THE OHIO IDEA.

By Martin Dodge.

The concentration of population in cities is the most important feature of our civilization to-day. This concentration has taken place to such an extent that about one-half of the population in the older settled parts of the country will be found living in cities. This result proceeds mainly from two great causes: One is that the capacity of human labor to produce is greatly increased by its concentration and by the division of labor and application of machinery that result therefrom. Another, and perhaps a greater cause is the cheap transportation which prevails in our time. This cheap transportation, so far as developed up to the present time, shows itself mainly in the decreased rates of transportation upon steamships and steam cars; and the rates have been so greatly cheapened by these means that it is possible to transport a ton a thousand miles upon our Great Lakes at the same cost as would be required to move it five miles with a horse and wagon over a common road. Two hundred and fifty miles may also be reached at the same cost upon the steam cars; but, with horses and wagons, the rate of transportation has remained almost unchanged during all the years of this great development in cheap transportation. This is apparent to almost every one, without discussion; but the reason why the rate of transportation has not been decreased with the horse and wagon is not so apparent; and it is now assumed generally that increased expenditures for the improvement of common roads in a common way would result in a corresponding decrease in the cost of transportation such as we have witnessed by the other means that I have referred to.

The fact that National and State road building has been dropped and that railroad building has been very extensive during the last thirty years, has been adversely criticised by many who think that if the same energy and expenditure were given to the improvement of the common roads, the results would be equally beneficial and perhaps more beneficial than those that have followed the era of railroad building. I do not share in these opinions, and believe that the reason why we have failed to cheapen transportation by means of horses and wagons results from the intrinsic weakness of such means rather than from the lack of devotion to them. A comparison of cost will show that a good wagon road costs about the same as a good railroad; the land used for the one is equal in amount and value to the land used for the other. The paving or macadamizing of a track in a suitable and substantial manner will average from $7,000 to $9,000 per mile, which is a sufficient amount to lay steel rails as heavy as the standard rail used upon the steam roads. This being true, it would not have been wise economy to direct the energy of the people to the building of wagon roads in lieu of railroads, unless the wagon road contributes more to cheapen transportation than the railroad—which no one will contend.

The steam railroads have served and will continue to serve a great purpose, but it is probable that the limit of their usefulness is nearly reached so far as the ramifications of their branches is concerned, but at the very point where the ramifications of these roads ceases to be of advantage, the elecric road comes in and is destined to contribute still more to cheapen transportation than it is possible that the horse and wagon road can do by any amount of expenditure directed to that end.

The rate of transportation with horses and wagons can never be brought, on the average, below twenty-five cents per ton per mile, while the average cost, by extending the electric cars upon steel rails, can easily be reduced to five cents per ton per mile. It is because of this economic fact that it will prove to be unprofitable and undesirable in the future to direct the energy of our people to building stone roads, as it would have been unprofitable and undesirable in the past to have done so.

I therefore advocate an important and far-reaching change in the manner of building country roads—a change which, when adopted, will lead to the substitution of inanimate power for animal power for the purpose of tranportation on our common roads all over the country. My plan is to extend the street car tracks from our cities out into the circumjacent territory a distance of thirty or forty miles, so that all the territory between centers of population, sixty or eighty miles apart, would be so reached. Let these tracks be so made and laid that wagons and carriages propelled by horses may go upon them, as well as cars propelled by electricity or other inanimate power.

It is already demonstrated that only one-eighteenth of the power is required to move a vehicle over a smooth steel track that would be required to move it over a gravel road, or one-eighth of that which would be required to move it over the best pavement. When this important fact becomes generally known to the farmers, they will realize that it is a poor policy to promote the building of macadam roads when an equal outlay would provide a good steel track. When the track is once provided so that cars and carriages propelled by horses can also go upon the same tracks with cars propelled by electricity, the superiority of the inanimate power will be so apparent that horse power will be quickly abandoned. And what we have seen in Cleveland and Columbus and many other American cities we will see upon the country roads, namely: A complete substitution of electric power for horse power wherever the rails are laid.

Heretofore the use of electric cars has been confined to carrying passengers, and the extension of the system has depended wholly upon private enterprise. This must be changed by enlarging the use to which the electric cars are put, and by supplementing private enterprise by a more liberal and enlightened public policy. There is no reason why the electric roads should not be carriers of freight as well as passengers, and especially of food products from the field to the market. It is easy to see that as the steam cars superseded the horse power for long hauls, so the electric cars will supplement it for short hauls.

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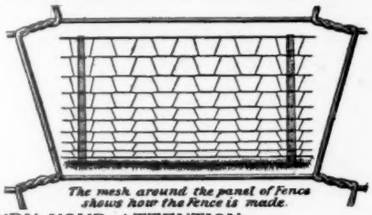

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One of the books which can be most highly recommended is The Dairyman's Manual, by Henry Stewart. This book keeps pace with the great advances made by the dairy industry, which amount almost to a revolution. The extension of the associated system, the invention of new and greatly improved apparatus and machinery, and the new processes, are clearly explained by the author, who has been a practical dairyman from his youth. Henry Stewart has also written a small book on Seventy-Five-Cent Butter, as made on a sandy New Jersey farm, which will prove very useful to all farmers who make butter at home. The story is told in a charming manner from the timorous start to the final success.

Among the elaborate books pertaining to dairying are: Practical Dairy Husbandry, by X. A. Willard; Milk Cows and Dairy Farming, by Charles L. Flint; American Cattle, by Lewis F. Allen; Manual of Cattle Feeding, by H. P. Armsby; and The Jersey, Alderney and Guernsey Cow, by Willis P. Hazard. Keeping One Cow is an excellent book for the suburban and village resident, while Dairying for Profit describes the making of fancy butter on a small dairy farm.

*We append a list of books on dairying, any of which will be sent postpaid on receipt of the stated price by Orange Judd Company, 52-54 Lafayette Place, New York.

The Dairyman's Manual. By Henry Stewart, author of "The Shepherd's Manual," "Irrigation," etc. A useful and practical work, by a writer who is well known as thoroughly familiar with the subject of which he writes. Cloth, 12mo. $2.00.

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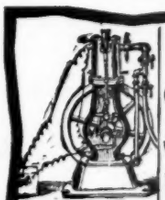

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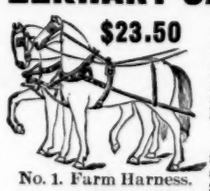

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MASSACHUSETTS. Worcester County Horticultural Society. Transactions for 1893-4. Edward W. Lincoln, Secretary. Worcester, Mass.

PHILADELPHIA ZOOLOGICAL SOCIETY. Twenty-Second Annual Report of the Board of Directors. Prof. Henry C. Chapman. Corresponding Secretary, Philadelphia, Penn.

THE ATKINSON COOKING APPARATUS. Illustrated Pamphlet by Edward Atkinson, Boston, Mass.

CURRENT HISTORY. The Cyclopedic Review. Edited by Alfred S. Johnston. Quarterly. Buffalo, N. Y.: Garretson, Cox & Co. $1.50 per year.

INDUSTRIAL EDUCATION. Eighth Annual Report of the U. S. Commissioner of Labor. Carrol D. Wright, Commissioner, Washington, D. C.: Government. 707 pp., 8vo., cloth.

MEXICO. Exporter's Hand Book. Comprises a Carefully Revised List of Bankers, Reliable Merchants, Professional Men, Landed Proprietors, etc., in the Republic of Mexico; besides Valuable Information to American Manufacturers Desiring to Cultivate Mexican Trade. Compiled and sold by Phillip G. Roeder, 664 Cedar Av., Cleveland, O., U. S. A. 1893. Cloth, pocket size. $2.

REPORT OF THE COMMISSIONER OF EDUCATION-1890-91. Two Volumes. Wm. T. Harris, Commissioner, Washigton, D. C.: Government. 1894. 1549 pp., 8vo., cloth.

AGRICULTURAL EXPERIMENT STATION BULLETINS.

ALABAMA—At Auburn. A new disease of cotton (B. 55).

CALIFORNIA—At Berkeley. Investigations of California olives and olive oils (B. 104).

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UNITED STATES DEPARTMENT OF AGRICULTURE, Washington, D. C., publishes the following:

CONTRIBUTIONS FROM THE U. S. NATIONAL HERBARIUM, Vol. II, No. 3. Pp. 347-588. By John M. Coulter. The closing number of the second volume of the contributions from the U. S. National Herbarium, which has been devoted to a consideration of the botany of Western Texas. The present number is a manual of the Phanerogams and Pteridophytes of Western Texas (Apetalæ, Monocotyledonæ, Pteridophyta).

EXPERIMENT STATION RECORD, Vol. V, No. 9. Pp. 831-940. Editorial notes; Methods of sterilized sand cultures employed at the Bernberg (Germany) Experiment Station; Abstracts of publications of the agricultural experiment stations of the U. S. Department of Agriculture, and of reports of foreign investigations; Titles of articles in recent foreign publications; etc.

INSECT LIFE, Vol. VI, No. 4. Pp. 283-346. A new and destructive peach tree scale; The currant stem girdler; Habits of Stibadium Spoumsum Gr.; The insect guests of the Florida land tortoise; The control of phylloxera by submersion; Acorn insects, primary and secondary; Preliminary report on suppressing the San Jose scale in Virginia; Notes from correspondents.

RECORD OF EXPERIMENTS WITH SORGHUM IN 1893. By H. W. Wiley. (Bulletin No. 40, Division of Chemistry.) A detailed account of the work at the Medicine Lodge (Kansas) station; the records of seed selections; selections for propagation in 1894; general conclusions; resume of seed-selection work at Medicine Lodge, 1893; notes on field work at Medicine Lodge; and a report from Heredia y Hermanos on sorghum growing in Spain.

LIST OF PUBLICATIONS OF THE U. S. DEPARTMENT OF AGRICULTURE FOR THE FIVE YEARS, 1889-1893, inclusive. A list giving by divisions the titles of the publications of the department for the five years named, and preceded by a brief introduction relating to the Department's publication work.

REPORT OF THE STATISTICIAN. Pp. 219-294. (Report No. 115, Division of Statistics.) Temperature and rainfall (October, 1893, to March, 1894); Condition of winter grain; Changes in crop area; The world's supply and consumption of cotton; Fruit crop prospects in the United States May 1, 1894; Agricultural production of Mexico for 1889 and 1892; Agricultural statistics of Uruguay; Austrian

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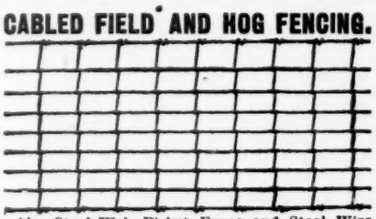

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INSTRUCTIONS FOR TAKING SAMPLES OF SOIL FOR MOISTURE DETERMINATIONS. (Circular No. 2, Division of Agricultural Soils.)

MONTHLY WEATHER REVIEW. Pp. 99-147, charts 8. (Subscription price 50 cents per annum.) A summary of the weather conditions observed throughout the United States, compiled from the reports of numerous observers, intended chiefly for meteorologists.

PROTECTION FROM LIGHTNING. By Alexander McAdie. (Circular of Information, Weather Bureau.) Gives statistics of damage done by lightning, the theory of protection against it, and rules for selecting and maintaining conductors.

LIBRARY BULLETIN. Accessions to the Department Library. Quarto. A list by authors and titles of publications recently acquired by the library of the Department of Agriculture.

CHARTS OF THE WEATHER BUREAU. Size, 19 by 24 inches. Lake Storm Bulletin No. 1 (series of 1894.) Storm of May 17 to 18, 1894. Semi-daily weather map, showing weather conditions throughout the United States, and giving forecasts of probable changes. Weekly Weather Crop Bulletin (series of 1894), reporting temperature and rainfall with special reference to their effect on crops.

THE SUBSTITUTION OF METAL FOR WOOD IN RAILROAD TIES. By E. E. Russell Tratman, C. E., together with a discussion of practicable economies in the use of wood for railway purposes. By B. E. Fernow. Reprint. (Bulletin No. 4, Division of Forestry.)

FUNGUS DISEASES OF THE GRAPE AND THEIR TREATMENT. By B. T. Galloway. (Farmers' Bulletin No. 4.) Reprinted.

TREATMENT OF SMUTS OF OATS AND WHEAT. (Farmers' Bulletin No. 5.) Reprinted.

HOG CHOLERA. Results of experiments with inoculation for the prevention of hog cholera. By D. E. Salmon. (Farmers' Bulletin No. 8.) Reprinted.

MILK FERMENTATIONS AND THEIR RELATIONS TO DAIRYING. (Farmers' Bulletin No. 9.) Reprinted.

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